THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

JULY, 1883.

RINDERPEST; ITS CONTAGIUM AND MITIGATION.

BY PROF. E. SEMMER, AND A. ARCHANGELSKI, VETERINARY INSTITUTION, DORPAT, RUSSIA.

As early as 1871, and again in 1874 and 1881, we discovered a micrococcus in the blood and glandular organs of animals affected with Rinderpest. Klebs also reported in 1872 that he found similar organisms in cattle affected with this disease. However, up to the present time it has been an open question whether these organisms were the actual cause, or whether they were identical with the contagium, of this disease. My assistant, Archangelski, and I have been engaged since November, 1882, in endeavouring to diminish the virulence of the Rinderpest contagium by cultivation. We had some inoculation material sent from the south of Russia, but by the time it reached us it was decomposed. However, we inoculated a sheep with it, and the animal soon showed marked symptoms of Rinderpest, and died. Directly after death we took some of the micrococci from the lymph glands and cultivated them in a sterilized neutral fluid at a temperature of 37° to 39° C., allowing access of air through a cotton-wool plug. The fluid used was broth (made by boiling down 1 lb. of flesh in 6 lbs. of water to 4 lbs.), a 1½ per cent. solution of extract of meat, and flesh-pepton gelatine.

There was soon developed a plentiful mass of typical micrococci and chain-like rods. With the third cultivation we inoculated a sheep (No. 1): the effect of this was only symptoms of fever.

XUM

We then inoculated the same sheep with the second cultivation, and twenty days later with the original material after this had been exposed for an hour to a temperature of 46° or 47° C. A second sheep (No. 2) was inoculated with the second generation of the cultivated fluid, then with the first, and in twenty days with the primary inoculation virus (after being warmed), by injecting it directly into the jugular veins. This animal showed a slight increase in temperature after the first inoculation, but remained quite unaffected after the others.

We then submitted some of the original material to a temperature of 10° to 20° C., which had the effect of destroying its virulence; for a sheep (No. 3) was inoculated with it, and it remained perfectly healthy. Several different quantities of virus that were sent were similarly treated, and they were all found to be inert after being exposed to a temperature of 15° to 20° C.

We received a fresh supply of active inoculation material in March, 1883, from our colleague, Gohtsch, of Karlowka, in the Government of Poltawa, and we inoculated both the above mentioned sheep (No. 1 and 2), and the one inoculated with the virus after this had been exposed to cold (No. 3), as well as a calf. Nos. 1 and 2, which had been previously inoculated with cultivated virus, remained healthy; No. 3 showed symptoms of Rinderpest, and recovered; whilst the calf died of Rinderpest seven days after inoculation. All three sheep were again inoculated with material obtained from the calf, but with negative results. We then cultivated some of this material in broth and a solution of extract of meat as before, and inoculated a calf. This animal succumbed to Rinderpest seven days afterwards.

Owing to the great risk attending such experiments, and the absence of authority to carry out a large number of inoculations at Dorpat, we had to content ourselves with the results we have obtained. With these very limited opportunities we could not say to what extent sheep are protected against Rinderpest by inoculating them with attenuated virus, obtained by cultivation in a fluid exposed to the air, or heating to 46° or 47° C. We may, however, presume that the micrococci which are found in nearly all the organs of an animal affected with Rinderpest are

the essential virus (contagium), and that cultivation and heat (46° or 47° C.) diminish the virulence, while cold (15° to 20° C.) destroys it altogether.

In conjunction with Prof. C. Raupach, we have maintained, since 1881, that the Rinderpest contagium could be completely destroyed by submitting it to a temperature of 55° C.

During these experiments we have carried out a similar series with Anthrax virus, and we find that by cultivating it at a temperature of 42° to 43° C. in a fluid exposed to the air (after passing this through cotton wool), it was attenuated, and when introduced into the bodies of healthy sheep it gave them immunity against Anthrax.

TWO INTERESTING CASES.

BY A. METHERELL, M.R.C.V.S., BRIGHTON.

Case No. 1.

I WAS recently called to deliver a cow—rather a small one—which had been in labour at least twelve hours. On examination I found a large calf (breech presentation), with nothing "useful" to be reached, except just the caps of the hocks, but succeeded in getting it away in about an hour, by amputating one hock and one stifle. I had already discovered that the fœtus, which had been dead some days, was minus any caudal appendage, but was much surprised to notice an absence of lumbar vertebræ, there being no osseous connection between ribs and sacrum. Lactation in the cow was much impaired, and she is being fatted.

Case No. 2.

This was a cart-horse, which I attended in the afternoon of May 9th, and found with complete loss of appetite, quivering of muscles of shoulders and flanks, breathing accelerated, and pulse very quick, intermittent, and almost imperceptible at the jaw, with other palpable signs of extreme exhaustion, so extreme, indeed, that drenching him was quite impossible, for with the head ever so slightly raised blowing commenced heavily, and falling was imminent. The symptoms were the same on the 10th, except that the penis was prolapsed, with apparent inability to retract it. As a consequence, it was swollen and cold next

XUM

day, and had to be suspended. It has now regained its normal proportions, but not its position. The most striking feature of the case, however, is that both eyes are left quite blindly amaurotic, apparently permanently so, which in my experience is unique.

BURSAL ENLARGEMENTS IN THE HORSE.

BY A. H. SANTY, F.R.C.V.S., NORWICH.

I SEND a few remarks on bursal enlargements in the horse and their treatment, more particularly those enlargements of the hock joint, and of that very troublesome one called "thorough-pin." It is unnecessary to give any anatomical description, as every member is acquainted with that. There appear to be two distinct kinds of these enlargements, one which is found in the young animal, and is the result of a rheumatoid or dropsical diathesis; and the other occurring in more adult animals, and caused by sudden strain or overwork.

"Bog spavin" cannot be called a bursal enlargement, although frequently associated in the young animal with thorough-pin, which latter may be defined to be a bursal enlargement running from side to side, through the upper and back part of the hock, and is often found in young animals shortly after being put to work, and occasionally in adult animals, attaining great size, and sometimes causing lameness. It is the treatment of this particular enlargement (that in most cases has answered my most sanguine expectations) which I wish to bring before the notice of the readers of the Journal.

Thorough-pin, as it occurs in our daily practice amongst used horses, is, as a rule, unaccompanied by bog spavin, is clear and defined, varying from a small, fluctuating tumour, the size of a walnut, to a tense, unyielding one, the size of a cricket-ball. In such cases, after inflammatory action has passed away, I have tried three kinds of treatment—the spring truss, firing and blistering, and repeated blisters. The spring truss does occasionally act well, but when the tumour is large there is great difficulty in getting it properly adjusted. It has also a tendency to teach the animal to snatch his leg, and if not properly applied

is apt to leave a blemish. I have discontinued its use. Firing and blistering I have seen succeed when all other means have failed, the only drawback being the permanent blemish. Repeated blisters with me have generally been successful. I have seen them fail in two cases. By repeated blisters, I mean two severe blisters in a week, and continued for five or six weeks. I have seen thirteen blisters applied in six weeks: there is no fear of blemish. I am indebted to Mr. L. Butters, M.R.C.V.S., Liverpool Tramway Company, for the knowledge of this treatment. The blister I have used is equal parts of Ung. Canthar. and Ung. Hydg. Biniod. Apply in the ordinary manner—say on a Monday morning; on the Wednesday morning smear the parts well with lard; on the Thursday morning get the whole of the scale off with the fingers, and repeat the blister, which will not require much friction in applying; on the Saturday smear well with lard; and on the Sunday get the scale all off, and apply the blister as before. This process is to be repeated for about six weeks, giving the animal one night in every week to lie down, after the first week. The greatest difficulty will be found in getting the scale off after the first blister. The others will come off comparatively easily. I never saw an animal in the least blemished. The skin over the parts is thickened, and is likely to cause one to think the cure is not so effective as it ought to be; but this rapidly becomes diminished when the horse is put to gentle exercise. Thorough-pins so treated do not appear to return after the animal is put to work. I have seen this treatment remove a very bad thorough-pin where the animal was unfit for work, and which had already been fired and blistered. I should not hesitate to apply it to any valuable horse.

Capped hock, after the inflammatory action has passed away, I have treated with equal parts of Carbolic Acid (pure), Ol. Tereb., and Ol. Rapii; applying with gentle friction every morning till a scale rises, when it is useless to apply any more until the scale comes off, which it does by rising up through the hair, without bringing the hair off, if the liniment is properly applied, with equal friction all round. The same applies to capped elbow. My object in penning these remarks, is to show that repeated blisters may be applied to the horse's skin at very short intervals,

XUM

and that without fear of blemish, and by this repeated action we have a much better chance of causing absorption of obnoxious tumours, etc., etc.

DEATH OF SHROPSHIRE DOWN RAMS.

BY JOHN A. MEREDITH, M.R.C.V.S., ELLESMERE, SALOP.

DURING my stay with Mr. William Morris, V.S., Ellesmere, Salop, on Wednesday, June 6th, I was consulted by Myles Woodburne, Esq., Kenwick, Shrewsbury, regarding his stock rams. On my arrival I was informed that six were dead and two others attacked, out of a total of thirty-three. On examining the sick animals, I found the pulse accelerated, elevation of temperature, great uneasiness, symptoms of abdominal pains, repeated attempts to urinate, and slight discharge of red-coloured urine. I also noticed frequent elevation of the testicles, and altogether evidence of great distress. The symptoms led me to conclude that they were suffering from what is called "Gravel" by breeders of stock sheep in Shropshire. I inquired into the nature of the food, and found that they had been fed upon mangolds, oil-cake, and clover hay since they were housed. I visited the sheep on June 7th, and was informed that one of the two that were attacked died a few hours after my first visit, and on making a *post-mortem* examination, the kidneys were of a slate-brown colour, the capsules easily removed, after which they lost their kidney form and became very much flattened. Upon making an incision into the pelvis of the left kidney, three small renal calculi were to be seen. The bladder was greatly distended with urine of a red colour, containing a large quantity of earthy matter; there were incrustations on the mucous membrane of the bladder and urinary passages, giving rise to suppression of urine and the symptoms that were observed.

Treatment.—Ordered that mangolds should be entirely restricted, avoiding all food and water rich in saline matters, the administration of a mild aperient to the remaining twenty-six, after which they had hydrochloric acid dil., combined with a diuretic every other day for a week, taking care to keep the digestive and secretory functions well regulated by diet. The flock are progressing favourably under this treatment, and there has been no other death.

THE GERM THEORY OF DISEASE.

BY JAMES LAMBERT, F.R.C.V.S., INSPECTING VETERINARY SURGEON FOR IRELAND, A.V.D.

(*Continued from page* 418, *vol. xvi.*)

I should state that some experimentalists in preventive inoculation for Pleuro-pneumonia have recommended the injection of the lymph into the blood-vessels of the ear. Now this, as Mr. Rutherford has pointed out, is a most objectionable and unsuitable place, for if untoward complications arise, as they sometimes do, the important structures in and about the head are at once involved, and a fatal result is almost unavoidable. Mr. Rutherford therefore chooses the tip of the tail for the operation, it being the furthest removed from important organs, and, consequently, the safest place, besides being quite as effectual as any other situation. Of course, he employs lymph taken from a lung affected with Pleuro-pneumonia, and without any cultivation, or so-called "attenuation," and therefore the method here is quite different from that of M. Pasteur for Splenic Fever. It is very remarkable that protective inoculation for Pleuro-pneumonia has not been more practised in this country.

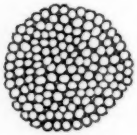
Glanders and *Farcy* are manifestations of each other. They rarely occur in the army, because as soon as they are detected they are rigorously stamped out, and all precautionary measures are taken. In a recent number of the *Archives Vétérinaires* is a joint paper by MM. Bouchard, Capitan, and Charran, giving the results of researches from November, 1881, to the end of December, 1882, into the nature of Glanders. You will see a translation of this paper in the VETERINARY JOURNAL for the month of April, 1883. They have discovered that Glanders depends on a rod-shaped bacillus, very like the Tubercle bacillus of Koch, which a reference to the diagram will show you is a very small one, especially if compared with the bacillus of Splenic Fever (*Bacillus Anthracis*), which you will see is a very large one. Their researches and cultivations of this Glanders bacillus were very elaborate. Shortly to state the principal facts of their report, I may say that horses, asses, cats, and guinea-pigs were inoculated with the cultivated fluid, and readily took the malady, showing after death the usual diseased lung

XUM

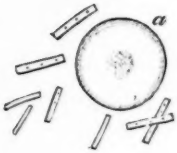
BACTERIA OR MICROBES.

Micrococcus, single and double. Micrococci are found in Small-pox, Erysipelas, Scarlet Fever, in putrefaction, in Septic diseases, and in Contagious Pleuro-pneumonia of cattle.

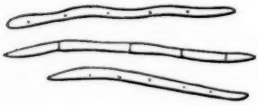
Chains of micrococci.



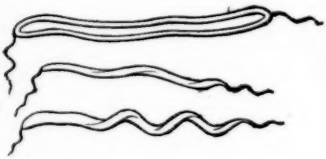
Zooglæa. A large number of micrococci collected together in a round mass.



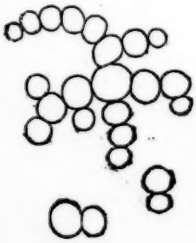
Tubercle Bacillus and Glanders Bacillus. Very small, not longer than half the diameter of a red blood corpuscle (*a*).



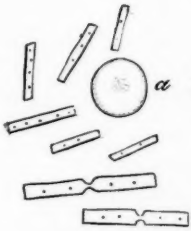
Vibrio, found in putrefying pus; also in Septicæmia and Pyæmia.



Spirillum, found in Relapsing and some other Malarious Fevers.

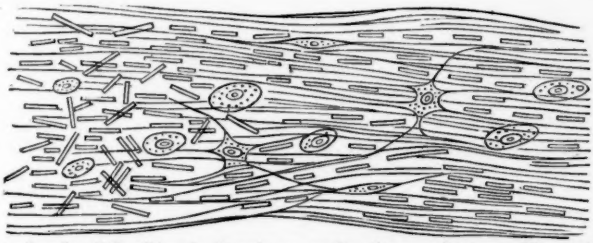


Yeast Plant, developed by gemmation, or budding, or fission, one cell from another.

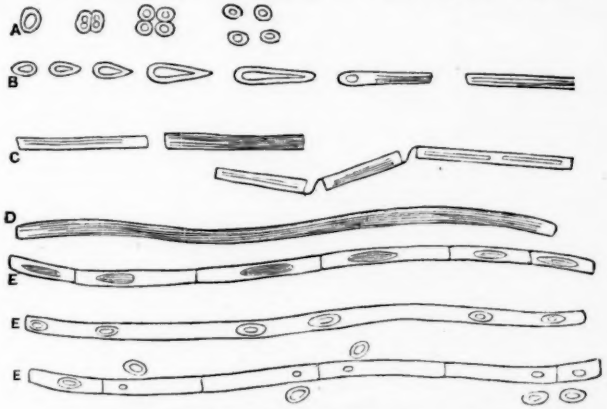


Bacillus Anthracis, the Anthrax Bacillus, present in Splenic Fever. It is a large bacillus—compare it with the blood globule (*a*). A bacillus of similar form is also present in putrefaction.

Bacillus dividing by transverse fission or segmentation.



Matted rods of Bacillus Anthracis, extending in rows between fibres of subcutaneous tissue.
Natural size of rods $\frac{1}{2000}$th to $\frac{1}{10000}$th of an inch in length.—*Carpenter.*



LIFE HISTORY OF BACILLUS ANTHRACIS.

(A) Division of spore into four sporules.
(B) Sporule developing into a rod.
(C) Increase of rods by segmentation.
(D) Filament produced by lengthening of rod.
(E) Development of spores within filament.—*Ewart.*

The Bacillus Anthracis, therefore, multiplies by transverse fission, and by spores, or seeds, or germs, whichever they may be called.—J. L.

signs, the miliary tubercles, nasal ulcerations, and tumefied glands. Some of the cultivations were made from the pus of an abscess of a man suffering from Farcy, and these being used on guinea-pigs and a donkey produced Glanders. It is unnecessary to give details of their experiments, but the result is they conclude that they have demonstrated the parasitic nature of Glanders and Farcy.

The most advanced pathologists now believe that Glanders and Farcy cannot be spontaneously generated, no matter how bad the sanitary conditions may be to which horses are exposed. Veterinary practitioners are becoming gradually converted to this opinion, which has long been entertained in some other parts of Europe. It is believed that Glanders and Farcy arise only from contagion or infection, and that they cannot be originated, either by debilitating diseases or bad sanitary conditions. Such bad circumstances undoubtedly render animals far more liable to contract disease, by weakening their powers of resistance, and therefore make them fit subjects for the reception of any contagion; this may be said to be a general pathological law. We must also remark that *bad sanitary conditions* make houses, stables, and other buildings and places, much more suitable for the *propagation and preservation of disease germs*, therefore cleanliness, and good ventilation, and drainage cannot be too much recommended and enforced.

It is, as we have already observed, becoming more and more the belief that before animals contract Glanders they must have in some way received the contagium of a previous case. The same remark of course applies to Farcy, it being only a modification of Glanders.

The contagious matter of Glanders may be carried about by dogs, cats, goats, etc., and by grooms and other persons about their hands and clothes, and of course by articles used about infected animals. The dried matter may be carried about in a stable by the air, and horses may sniff its contained germs into the nostrils.

It is instructive to note that Glanders has not yet appeared in Australia and New Zealand, although horses there, as here, are exposed to every kind of hardship and bad sanitary conditions.

Now mark what follows. Horses in large numbers are exported from Australia to the East Indies (Hindostan), and when they get there and are exposed to the contagion, they readily contract Glanders. The inference therefore is that the germs on which the disease depends have not yet found their way to Australia and New Zealand, but that if they did so horses in those countries would be as likely to suffer as in other parts of the world.

I have in two different voyages to Natal, of exactly forty days each, seen a very large number of horses, over two hundred and seventy in the one case, and two hundred and thirty-seven in the other, cooped up on board ship—that is for six weeks all but two days in each voyage, and a good part of this time was in the tropics, where all the circumstances of stifling heat, etc., would have led us to expect an outbreak of Glanders, but none occurred. Here, again, the inference is that there were no previously infected animals on board; in fact, a very rigorous veterinary examination to assure ourselves of the healthy condition of the horses was made before they left barracks for the port of embarkation.

It may be here stated that Professor Galtier, of the Lyons Veterinary School, has inoculated dogs with Glanders matter. The dogs recover from such inoculation, but the virus passed through their systems is weakened. By this, some considerations as to the possibility of protective noculation are suggested. M. Galtier advises the inoculation test for Glanders to be made on the dog instead of on the ass.

With respect to the impolicy of allowing that Glanders or Farcy, or any contagious or infectious disease, can be spontaneously generated, I shall make some further remarks before we conclude.

Rabies and *Hydrophobia* are believed to owe their existence to Germs, and if this be so we are entitled to assume that they cannot be spontaneously generated. The best authorities are gradually coming round to this view. As you know, Mr. George Fleming is our greatest authority on Rabies and Hydrophobia. He now believes that it is a purely contagious disorder, or in other words, that it does not arise spontaneously—an opinion which

XUM

has long been held by many Continental observers. In support of this view I may state, that in some countries Rabies has never appeared. In the Island of Mauritius, where the importation of dogs is permitted by our Government it exists, but in the neighbouring Island of Réunion, which belongs to France, and where importation of dogs is forbidden, it has never been seen. Australia and New Zealand are also free from it.

It is well known that some individuals will resist some contagious diseases. There was a dog at the great veterinary school of Alfort, which could not by repeated inoculations be made to take Rabies. This immunity of individuals from some contagious maladies has often misled investigators who are content to base their conclusions on the result of one or very few experiments, and shows us that we should not hastily arrive at a decision.

M. Galtier, in a paper presented to the French Academy of Sciences on the 1st August, 1881, proposes as a method of protective inoculation for Rabies to inject the virus of the disease into the circulatory current of healthy animals. He has performed some successful experiments in this direction, but further investigation is desirable.

As to the tissues of the body which contain the virus of Rabies, it may here be mentioned that M. Pasteur and MM. Chamberland, Roux, and Thuillier his assistants, in a joint paper read before the French Academy of Sciences on May 30th, 1881, stated that they had communicated the disease by inoculating with portions of the brain and medulla oblongata. Rabies is quickly thus produced—in a week or a fortnight—and therefore for experimental purposes saves the trouble and delay of waiting for the long incubatory period, which frequently follows the bite of a rabid animal.

M. Pasteur also states that the incubatory period of Rabies can be much shortened by inoculating direct into the brain, and this would make it appear that the virus has quickly reached its favourite locality, without having to go through various tissues, during which time it is inactive. We know that Rabies chiefly affects the brain and adjacent parts. It should be added that M. Pasteur is paying much attention to Rabies, and has recently

XUM

announced some results; but as a controversy on the subject is now going on between him and M. Koch, it is needless to further mention them to-night.

This concludes our brief notice of a few of the most important transmissible maladies in which the veterinary practitioners of the United Kingdom are interested, but we cannot finish a paper on the Germ Theory without shortly noticing the doctrine of *Spontaneous Generation.*

If, as we have endeavoured to show, every infectious and transmissible disease depends on its own particular living organism, it is difficult to conceive the spontaneous generation of such diseases. "That a virus producing the peculiar symptoms of Small-pox or Scarlet Fever—symptoms so much alike in each case, in innumerable instances, and for so many centuries"—should be spontaneously generated would be wonderful. That diseases occur where no previous case could have been is a truism, but contagion and infection are conveyed, as we every day see, in such remarkable and mysterious ways, that he is a bold man who accepts negative proof of spontaneous generation in the face of so many and constantly-recurring instances, where the malady is evidently due to contagion. On this subject Dr. Charles Cameron says: "No one who has read the recent work of Professor Tyndall can doubt that the doctrine of spontaneous generation is dead."

A favourite argument of the advocates of the spontaneous generation of disease is to ask how we account for the first case. Might we not just as well be asked how we account for the first oak tree? Yet if we found one growing on a newly-discovered and far-away solitary island, we should not dream of attributing it to spontaneous generation—we should feel certain that the seed of a former oak tree had, by some means or other, reached the island. In reply to such questions we may quote what Dr. William Aitken ("Outlines of Science and Practice of Medicine"), speaking of specific diseases, says: "The *origin* of all of them, so far as 'how their respective first *contagia* arose,' is alike unknown, just as in physiology the exact 'origin of species' is unknown, Indeed, these speculations may be only two phases of one question."

XUM

But it is not good policy on our part as veterinary surgeons to admit the spontaneous generation of contagious and infectious diseases. If we do so we make people careless about preventing contagion, and we allow excuses for neglect of precautionary measures. Some able observers think that if we say contagious and infectious diseases cannot arise spontaneously, we afford an excuse for the idle, the dirty, and the ignorant for their neglect of sanitary measures; but when we know, as we have just pointed out in speaking of Glanders, that bad sanitary arrangements not only weaken subjects, but render them a comparatively easy prey to disease, besides giving suitable conditions for the preservation and propagation of disease germs, we have therein the strongest arguments for enforcing cleanliness, good drainage, and proper ventilation. We cannot too much insist upon these essential requisites for good health.

When we sometimes hear of mysterious outbreaks of some malady, for instance, Foot-and-mouth Disease, in places where no access of possibly infected animals has been allowed, we may be puzzled and the advocates of spontaneous generation may be triumphant. If, however, we remember, that human beings, horses, dogs, vermin, running game, and other animals can, and sometimes do, convey the virus, we should be very rash if we declared outbreaks to be spontaneously generated because we could not trace the channel of contagion.

The foregoing remarks appear to prove, that to admit the doctrine of the spontaneous generation of contagious and infectious diseases is to disregard the latest teachings of science and research. If we recognise this doctrine we make people, as before said, careless, reckless, and despairing about preventing and stamping out such scourges, for they will then argue that precautions are of little or no use, as disease may and will originate in spite of them. Let us avoid and discourage such impolitic and erroneous views, and consistently refuse to allow that contagious and infectious diseases can be spontaneously generated.

XUM

Editorial.

THE ARMY VETERINARY DEPARTMENT.

THE progress made by veterinary medicine in this country within the last few years, must strike the most casual observer as very great. Indeed, comparing the position and condition of its practitioners twenty years ago with what these are to-day, we might almost be justified in asserting that the rate of advancement has been unparalleled in the history of professions. Even within four or five years giant strides have been made, and especially in the social position of the profession. The greater influence of members of the Royal College of Veterinary Surgeons in local and general questions affecting the health of animals, as well as that of the public; the recognition of their value to the community, and the necessity for encouraging them, having received legislative approval and confirmation; and the fact that their services are worthy of royal reward and university distinction—all point to an advanced and advancing condition which, less than a quarter of a century ago, would have seemed impossible to the great majority of people.

More especially, perhaps, do we find evidence of this wonderful progress in the Army Veterinary Department, and the concessions which have been made to it from time to time in recent days, testify to the greatly enhanced appreciation in which the military authorities now hold the services of veterinary officers, and the proofs these have abundantly afforded of their indispensable utility, particularly in the field, where their great value has been repeatedly and warmly testified to by the officers under whom they have served. This appreciation has led to considerable amelioration in the position—financially and socially—of veterinary officers, and the increase of relative rank (which also carries with it increase in allowances) to which we recently referred, is the latest evidence of the willingness of the War Office to substantially acknowledge the claims of these officers to consideration. The relative rank of a veterinary surgeon who joins the Department is that of lieutenant; this rank he now retains only for ten years (instead of twelve), when he receives that of captain (first class veterinary surgeon); and in another ten years he receives the relative rank of major—a rank which was not before given to veterinary officers of this grade; while inspecting veterinary surgeons are advanced a step in rank—to that of lieutenant-colonel—which they did not previously hold.

These promotions cannot but give satisfaction to the Department, as they remove what has been a cause of complaint for some time.

The exclusion of veterinary officers from the privilege of presentation at Court has, for nearly half a century, been felt as a great indignity heaped upon them, and for a long time an agitation has been maintained, with the view of having the interdiction removed. All attempts failed, however, until last month, when the Lord Chamberlain, at the instance of His Royal Highness the Field Marshal Commanding in Chief, and Lord Wolseley, Adjutant General to the Forces, abolished the restriction, and

XUM

granted army veterinary surgeons the privilege which is accorded all other officers. This concession was not made through the claim relative rank might be supposed to confer, but because of the higher social and educational standard veterinary officers have reached.

One by one the formidable barriers which, not long ago, were opposed to professional advancement have been demolished, and there remains little more to be done, except to consolidate the ground which has been acquired, and to prove worthy of this position by endeavouring, in every way, to maintain progress in education—general and professional—as by it alone can we retain our claim to the privileges conceded to other professions.

In the meantime, the profession has every reason to be gratified that all invidious social obstacles have now been abolished, and though the army veterinary officers may reap the immediate advantage, as they have been immediately instrumental in securing victory, yet the entire profession shares with them in the honours and privileges they have gained.

In referring to the greatly improved position of officers of the Army Veterinary Department, too much praise cannot be awarded Mr. Collins, who has just retired from the Principalship. For seven years he had most indefatigably laboured to achieve the success with which he was ultimately rewarded, and he will have the gratification of knowing that his tenure of office has been distinguished far above that of all his predecessors, by reforms and improvements which have placed the veterinary officers of Her Majesty's Army in a better position, perhaps, than those of any other army in the world. A heavy debt of gratitude is due to him for the assiduity, courage, and perseverance which he brought to his task, and for the skill and tact he displayed under difficult, sometimes almost disheartening, circumstances. He carries with him into his retirement the good wishes of not only those who have directly benefited by his labours, but of the whole profession. May he enjoy to the full his *otium cum dignitate*, and his name ever be associated with the Department for which he has done so much, and upon which he conferred so much honour and distinction during a trying period in its history.

THE COMPARATIVE PHYSIOLOGY OF MENSTRUATION.

BY ALFRED WILTSHIRE, M.D., F.R.C.P., LOND.

(*Continued from p.* 353, *vol. xvi.*)

Analogous susceptibility is displayed by the human female in the disturbance, mostly arrest, of menstruation that so often attends change of residence. I have met with innumerable instances of this. Nothing is more common than for maid-servants coming from the country to London to have amenorrhœa for some months. Among ladies, many instances of disorder have come under my notice from foreign travel; but the effects are not always injurious. Making due allowances, then, we may now review the evidence at our disposal.

Mr. Simpson's statements, based upon observations made on his own cattle, are as explicit as they are reliable. He states that his heifers usually arrive at puberty at from six to nine months, and sometimes even earlier;

and that, after the establishment of the symptoms of heat, or "bulling," the rut recurs, when the bull is not allowed access, with strict regularity every twenty-one days, or three weeks. Œstro-menstruation is shown by swelling of the vulva, which at first weeps an odorous mucus, but soon this becomes quite red from the presence of blood; and when that stage is attained, the heat rapidly subsides, intercourse being then refused. Mr. West, Mr. Simpson's excellent veterinary surgeon, emphatically confirms these observations, and adduces his very large acquaintance with analogous phenomena, personally observed, in other animals, as the mare, female ass, bitch, cat, etc., as well as in cows.

Mr. West made a statement to me which is amply corroborated by remarks of Mr. Darwin's, namely, that in the rougher Welsh and Highland cattle, which lead harder lives, maturity, or the epoch of puberty, arrives much later than in Alderneys or shorthorns; but he adds that a flux of sanguineous character equally occurs in the females of those breeds at the time of the rut. I am indebted to Mr. West for information respecting a remarkable case of "impervious vagina in a heifer," which occurred in his practice, and which illustrates the occurrence of sanguineous menstruation in the heifer. Mr. West was called to see a heifer supposed to be in labour, and unable to calve. On examination, he found the vagina to end in an impervious canal three inches from the vulga. Thinking the fœtus must be dead and aborfion prevented by the state of the vagina, Mr. West advised that nothing should be done, hoping the pains might subside. They continued, however, and the heifer lost flesh. Four months afterwards, Mr. West determined to cut through the obstruction. This he did, but having passed it, he found the os uteri contracted; accordingly, into this he inserted a whalebone sound, and dilated it a little, when a reddish-brown offensive fluid began to escape. About two quarts altogether came away, but no signs of a fœtus. The beast recovered. Mr. West concludes with the remark that the fluid "should have come away as a periodic discharge, but was prevented by the impervious state of the vagina, which must have also rendered impregnation impossible."

Mr. West was also so good as to refer me to a similar case published by Mr. Macgillivray, in vol. iii. of the VETERINARY JOURNAL, p. 443. In this case there was an impervious vagina in a heifer, which had never been put to the bull. The creature had severe bearing-down pains, and was thought to have obstruction of the bowels. A passage was forced into the generative canal, and dark-brown offensive fluid escaped. Mr. Macgillivray regarded the case as proving "the existence of a menstrual discharge in the brute female, analogous to that in the human female." He considered that the "œstral" products had never found vent from the uterus. These views were combated by another veterinary surgeon, Mr. Gerrard, but his arguments, though plausibly advanced, were quite inconclusive. Mr. Gerrard points out that adhesion of the vagina sometimes arises from injury done in copulation; but admitting this as a possible though rare occurrence, it does not apply in Mr. Macgillivray's case. Nor is Mr. Gerrard's argument on the "sero-sanguineous" nature of the fluid valid; for, as will be shown, the sanguineous character of the fluid diminishes as we descend in the organic scale; even in women the catamenial discharge is sometimes abundantly mucous. Mr. Macgillivray replies to his opponent's strictures in the same volume (vol. iv.), and conclusively shows that his case was one of impervious vagina. He goes on to express the very decided conviction that the lower animals do certainly have an "œstral" discharge resembling the catamenia of woman, though it is not so invariable, copious, or well-defined as in woman. He then gives instances of excessive flow in the cow and mare, and concludes by saying: "The discharge of a more or less quantity of a blood-like fluid in heifers and

XUM

cows during the cessation of 'heat,' is so common, and so well known to all herdsmen, as scarcely to require any notice here."

Mr. Gerrard, admitting that the "œstral" discharge is frequently more or less tinged with blood in the lower animals, considers that a sanguineous flow is the exception and not the rule; but it is obvious that he is opposed to authorities like Fleming and Saint Cyr, as well as to the observation of most competent inquirers. Probably, when it is understood that, in accordance with the law of evolution, the discharge in the lower females is normally less sanguineous than in woman, these discrepancies between undoubtedly honest observers will disappear.

Laycock (*Nervous Diseases of Women*, p. 42) says:—"The menstrual period has been considered analogous to the heat of lower animals by numerous writers. Reaumur and others, down to Cruikshank and Blundell, have described the state of the organs of generation in brute females during this period; they have been found fuller than usual of blood, the fallopian tubes in a state of excitement, or applied to the ovary, the latter enlarged and studded with developed Graafian vesicles, and a serous blood-coloured fluid discharged from the vagina. There are various considerations which serve to support this opinion."

"The following may be considered as the true state of the case respecting menstruation. Since the uterus itself is not an essential organ of generation, but merely superadded, and since the influence of the ovaria and testes over all the other processes and organs connected with generation, including the existence of the uterus and its development during gestation, has been demonstrated, there appears not the slightest reason for withdrawing the phenomena of menstruation from their agency. It is in the ovaria, then, that we have to look for the causes of this process. There is every reason to believe that Graafian vesicles are coming forward at intervals during the whole period in which the reproductive organs are active; that these vesicles enlarge and burst in succession, and shed the contained ovula, whether sexual connexion takes place or not; and that, from recent researches, these changes in them take place at each menstrual nisus. If we remember that, during the period of heat in the lower mammals, as the ewe and the sow, and of spawning and egg-laying in birds, fishes, reptiles, insects—indeed, of every class of oviparous animals—these ovula become developed, and are shed, whether they be fructified or not, recurring at the same time to previous statements, we cannot help coming to the conclusion that the period of menstruation is precisely analogous to the period of heat; that there is, in fact, an excited state of the ovaria at each period when the ovula are shed; and that the capability of performing this periodic function distinguishes the ovaria of the woman from those of the impubescent girl and virago. If, at this period, an ovulum be vivified by the male semen, conception takes place; and this hypothesis at once explains the doctrine that women more readily conceive at the menstrual period, maintained by Hippocrates, Galen, and their numerous copyists among the ancients, by Dr. Montgomery and others in later times, and generally believed by females themselves. When conception has taken place, a new action is set up in the ovaria, which may be considered as a permanent stimulus to the whole of the generative organs; and although the usual nisus may and does occur during pregnancy, its effects are rendered less obvious from its permanency.* If, on the other hand, the discharged ovulum or ovula be unimpregnated, the same process is repeated at the next menstrual period, and

* Fleming (*Vet. Obstetrics*, p. 52) says:—"Franck has convinced himself, by *post-mortem* examination of mares, of the possibility of ova being thrown off from the ovary during pregnancy."

so continues until age, disease, or conception nterferes with the ovarian system. But we shall find that this periodic movement is not limited to the ovaria, but that it is an affection of the general system in which the ovaria partake ; and that it is through these the secondary system in connection with them is influenced, and all the attendant phenomena (those of menstruation) excited."

"Recurring to our previous statements, it appears that in many animals the development of the testes and ovaria, and the shedding of the ovula and spermatic fluid, occur at definite seasons of the year, and, for the most part, in spring and autumn. The heat also of those animals, in which the genitals are in continuous activity, occurs at fixed periods, and these must be compared with the periodic movement of the human female. Again, the period of gestation in woman is a multiple of the menstrual period, and it will be useful to inquire into the relations of the periods of utero-gestation in animals generally to that of woman."

"Are the lower animals influenced by a periodic nisus, weekly or monthly? This question I shall attempt to answer in the affirmative, as well as my limited space will allow. It has already been remarked, that the change from fœtal to uterine [? extra-uterine] life is a phase in development which in man occurs at the end of the tenth menstrual period of the female. This is correct as regards the general fact ; but it must be added that slight labour-pains occur at every menstrual period, but most particularly in the third, fifth, and seventh months of gestation ; a fœtus of the last-mentioned age being able to maintain an independent existence. The period of incubation of the egg is strictly analogous to the periods of utero-gestation in mammalia ; and the same remark is applicable to that of the ova of fishes, reptiles, and insects, with due limitations. For example, in insects, the egg, larva, and chrysalis states correspond to the whole period between conception and puberty in mammalia. Mr. Kirby remarks that winged insects, many brachiopod crustacea, and the batrachian reptiles, in leaving the egg, only quit their first integument, answering to the chorion or external envelope of the human fœtus ; they, therefore, still continue in the fœtal state." Laycock also quotes from the *Zoonomia* of the elder Darwin (Erasmus) that, "in mares and bitches, if the venereal orgasm be disappointed of its object, it recurs at monthly periods" (p. 60).

Laycock adds many illustrations of the periodical recurrence of heat at brief intervals in the lower animals (pp. 60-61) ; and mentions an instance of a cow which, while in calf, was in heat every three weeks, and calved three weeks after the last time of heat. Kolbe and Buffon are quoted with reference to menstruation in monkeys, the latter asserting that the following monkeys menstruate (besides the ourang-outang):—"The Barbary ape, the ribbed-nosed baboon, the lion-tailed baboon, the pig-tailed baboon, the hare-lip monkey, the Malbrouck (*simia sinica*), the white eyelid, the varied, the green, and the moustache monkey."

Laycock states that the rutting of the males is somewhat analogous to the heat of the females in respect of its periodicity, and remarks that "the ring-pigeon lays eggs for fourteen days after pairing, sits other fourteen days, and in fourteen more the young ones leave the nest. The goldfinch completes its nest in three days ; it is left unoccupied four days, when the first egg is laid. Reviewing the whole of the preceding facts, it appears a legitimate deduction, that, in animals, changes occur in every three and a half, seven, fourteen, twenty-one, twenty-eight days, or at some definite number of weeks." In most of Laycock's statements I concur.

The valuable contributions of Pouchet to the subject of menstruation lend material support to the view that the function pervades the mammalian series, and is subordinate to the law of evolution already propounded.

XUM

He remarks (*Théorie Positive de l'Ovulation Spontanée*, p. 201), that the commotion excited by the maturation of ovules, not only excites the genital apparatus, but reacts upon the whole individual. "Sometimes it is manifested but once during life; the animal—suddenly exhausted by this concentration of all its vital forces—dies soon after having produced its ova; this is observed in the majority of insects. The beings of more robust organisation resist this act, and we see that during the middle period of their life they reproduce annually. The majority of fish, reptiles, amphibia, birds, and mammalia are in this case. . . . There exists in these creatures a species of periodic growth, as G. Saint-Hilaire has said, during which the blood flows constantly towards the ovaries and excites an expansive movement." He then points out the heightening power of domestication, but insists that, even when the periods are rendered more frequent, they still show intermittance, which in woman is monthly. In the lower vertebrata, the sexual disturbance is not so conspicuous as in higher creatures. In some mammalia the genital orifices and adjacent parts show conspicuous excitement, often accompanied by sanguineous emissions. The names of Aristotle, Linnæus, Buffon, Cuvier, Blumenbach, Saint-Hilaire, and others are quoted in support.

Again: "If observation shows that ova are incontestably produced at fixed epochs in all invertebrate and vertebrate animals, since in them new generations appear constantly after regular and invariable periods, if, I say, that is admitted for all the zoological series, and it cannot even be contested as regards mammalia in a wild state, it becomes evident that the aberration observable in these latter that lived in our habitations, comes only from the new condition in which they are found; for attentive observation shows us that in them equally there are phases of excitation, and that it is during these that ovules are produced and that fecundation is possible. The condition of the human species enters entirely into this category, and if the periods when the reproduction is possible are very frequent in women, that belongs manifestly to the amenities of social life."

"In animals the flow of blood is ordinarily less abundant, and the period of excitement returns at longer intervals. Notwithstanding, there exist in the domain of mammology species which are nearly as much regular as certain women, and in which the flow appears almost as frequently." Dugès and Jourdan also remarked these analogies.

Isidore Geoffroy Saint-Hilaire says (Breschet, *Recherches Anatomiques et Physiologiques sur la Gestation des Quadrumanes*, Paris, 1845, p. 4):—"In monkeys the flow coincides in all the females with a swelling, more or less manifest, of the vulva and environing parts. This swelling, moderate in the females of the apes, is, on the contrary, very considerable in the females of many species of macacus, and in all the species of cynocephalus. In all the latter it extends not only to the anus, but beyond, and it is so marked that all the orifice seems as if environed by a large collar. The skin at the same time becomes deeply red. In the mandrill, G. Cuvier compares, for volume, to a child's head, the unequal red and inflamed-looking protuberance which then forms around the anus. The same phenomena, though a little less pronounced, occur in the females of macacus; and even it often happens in these, for example, and in the females of rhesus and maimons, that the swelling extends to the inferior part of the tail, near the base." Again, Saint-Hilaire (*Histoire Naturelle des Mammiferes*, Paris, 1824) says:—"The females of apes, macacus, magots, cynocephalus, and probably of all other kinds of the first tribe, are subject to a flow periodically appearing from month to month. The matters emitted by the vulva are blood and mucosities, sometimes sanguinolent, sometimes white; the flow continues during six or eight days, and sometimes more. G. Cuvier fixed even at fifteen days the dura-

XUM

'tion of the flow in a female mandrill which he made the subject of repeated observations."

Cuvier observed menstruation in carnivora, among others, in the genets; and Lesson and Garnot recognised it in the flying-fox (pteropus), which Saint-Hilaire says is periodical. Haller quotes many authors who thought monkeys, cows, deer, and bitches offered evident traces of menstruation. Numann and Rainard made similar observations, while Pouchet had himself observed it in bitches, sows, cats, rabbits, and guinea-pigs, especially in the first. (Mr. Bartlett, the able superintendent of the Zoological Gardens, tells me that the discharge may be abundant in the bitch, and that the heat is sometimes long sustained in the carnivora.) The wild pigeon produces only once or twice a year, while the varieties which it has given us through care, breed ten times a year, as Aristotle, Buffon, and Blumenbach have observed. Kuhlemann says sheep come to heat every fortnight; sows every fifteen to eighteen days. Kahleis and Numann, that cows come every month or three weeks; Greve, that mares come monthly; and Cuvier, that buffaloes, zebras, and monkeys, come also monthly. Courty also recognised the graduated relation of menstruation in the zoological series.

From his observations on sows, Pouchet concludes that the menstrual phenomena ordinarily precede the rupture of the Graafian follicles. P. 262:—"During menstruation the vagina of the sow offers a rosy tint, and the mucous fluid which it contains is slightly abundant. Microscopical examination showed me that the latter is composed of fragments of epithelium, cylindrical and pavement; mucous globules, and blood-corpuscles in small number. . . . The womb, before its bifurcation, is reddened, and its capillaries are highly injected with blood. . . . The cornua are excessively injected with blood. Their mucosa is considerably thickened and spongy, and of a deep red, and, in certain parts, the abundance of blood wherewith it is engorged gives it even a violet coloration. . . . Thus, then, menstruation in the sow is a demonstrated fact. As in the human species, there is an emission of blood; but if this is not abundant, it is because this fluid is found in great part poured out in the immense extent of the internal generative apparatus." During the intermenstrual period, the vaginal and uterine mucous membranes are pale. Pouchet says that the appearances are absolutely similar in the rabbit, but that there is even more blood; and his observations upon bitches, cats, and other mammalia were equally confirmatory.

At p. 266, Pouchet says:—"In a work on the physical and moral system of woman, Roussel (*Système Physique et Moral de la Femme*, Paris, 1813, also edited by Cerise, 1860, Paris) pretends that menstruation is due to civilisation. We have expressed nearly the same opinion; only we think that the social state has not determined the essence of the phenomenon, but that it has only considerably augmented its frequency in rendering it nearly mensual."

Auber also attributes the existence of the function to social advancement (Raciborski, p. 18). "Velpeau (*Tr. Comp. de l'Art des Accouch.*, t. I., p. 126) says that, in Lapland and Greenland, women are not more often regular than every three months; and Gardien (*Tr. d'Accouch. et de Mal. des Femmes*, t. I, p. 233) pretends that in women in Polar countries the menstrual flow takes place only twice or thrice a year." Pouchet, therefore, ably argues the physiological identity of the function in all the mammalian series, including woman; he says (p. 227):—"Menstruation consists in the appearance of a periodic and temporary excitement in the genital apparatus of woman. This function is declared by an afflux of blood in all the organs that share in it, and by the flow externally of a certain quantity of this fluid. Then it is essentially and ordinarily characterised by a swelling and ma-

turation of one of the Graafian vesicles, and by the emission of the ovule which this latter contains."

Trousseau (*Clin. Med.*, p. 598), speaking of signs exhibited by the lower animals while breeding, says :—"Need I add that, during the period of rut in most female animals, the congestion of the genitals manifests itself by a flow of blood, and by an increase in the secretion of the glands, which are annexed to those organs?" Both Tarnier and Chantreuil (*Tr. d'Accouch.*), and Cazin, in his memoir on "Varices in Pregnancy and Parturition" (*Arch. de Zool.*, 1880), quote Raimond as stating that, "In the females of animals the vagina is coloured red at the epoch of heat; it takes a violet or brownish tinge during pregnancy, and the mucous membrane seems to thicken." Cazeaux says :—"In the rabbit it is tumefaction and almost varicose injection of the vessels of the vulva. To this colouring and tumefaction is added, in the bitch, an odorous secretion, which allures the males and puts them upon the track of the females. Finally, in monkeys a more or less abundant hæmorrhage occurs, which, in the case of the macaques and the cynocephalæ, coincides with so monstrous a swelling of the vulva, that, in certain cases, the surrounding parts are infiltrated, as though inflamed in consequence of the sting of bees."

Raciborski (*Traité de la Menstruation*, p. 43) remarks on the resemblance between the rut and menstruation in the matter of periodicity, and states that sows have symptoms every fortnight to eighteen days, heifers every twenty-one days, sheep every fortnight. Quoting from a friend having choice cattle, he says that the higher breeds require the male more often than inferior breeds; on which he exclaims "*En voilà un singulier privilége de l'aristocratie dans la race bovine!*"

Generally, in most animals, there is a swelling of the external genitals, and a discharge which is often sanguinent, especially in the heifer, bitch, sow, and rabbit, while in monkeys, particularly in the great species, it often takes the proportion of a hæmorrhage.

Raciborski regards woman and the quadrumana probably as the only females who have complete exfoliation of the mucous membrane of the uterus after each conception, and considers that the commencement of this important process is repeated at each ovulation. He says, also (p. 18), that he has seen in the Jardin des Plantes, at Paris, monkeys who were abundantly regular every month for five days.

Mr. Darwin incidentally refers to the existence of the periodical function in the females of the lower animals thus (*Animals and Plants under Domestication*, vol. i., pp. 33, 34) : "Several years ago I saw, confined in the Zoological Gardens of London, a female hybrid, from an English dog and jackal, which even in this, the first generation, was so sterile that, as I was assured by her keeper, she did not fully exhibit her proper periods;" and again (*Ibid.*, vol. ii., p. 132) : "Elephants . . . both male and female, have their proper periodical seasons."

Fleming (*Veterinary Obstetrics*, p. 55) says : "The rutting, heat, œstrum, or venereal œstrum of animals is analogous to menstruation in woman, and marks the period of maturation in the ovarian ova or ovum, according to species. This condition is intermittent or periodic, not continuous; and is characterised by a peculiar systemic excitement, that usually continues for a somewhat definite period in the two sexes. In the male and female, but especially in the latter, the generative organs at this period become more or less turgid and sensitive, and the uro-genital secretions are increased. In the female there is a determination of blood to the ovaries, and changes take place in these which have already been described. The excitation of the generative apparatus reacts on the whole system, and produces a kind of fever or irritability in the animal; its sensibility is increased; the appetite is

more or less in abeyance, or capricious, and usually there is thirst. . . . . Attempts at micturition in the female are frequent, but only a small quantity of urine is passed; the mucous membrane of the vagina is injected; and, with solipeds, there are oft-repeated movements of the clitoris and vulva, and an opaque white secretion, or even emissions of blood are ejected spasmodically, *per vulvam.*" In a footnote Fleming says: "Kaiser, in the *Magazin für die Gesammte Thierheilkunae* for 1859, mentions a mare, twenty-four years of age, which every three weeks had a sanguineous emission from the vulva; this discharge ceased towards the middle of pregnancy, but returned after parturition. I have frequently witnessed the periodic discharge from mares either streaked with blood, or blood-tinted;" and then, resuming the text, "In other animals, this ejection sometimes consists of a viscid red tinted or sanguinolent fluid. It has a special and powerful odour, which attracts the males. . . . . The uterine mucous membrane is also very congested, and there is poured out on its surface a fluid containing epithelial *débris*, mucus, corpuscles, and blood-globules.

"The existence in the lower animals of what is analogous to the menstrual discharge in the human female has frequently been denied, but without any reason or proof. A discharge of blood from the sexual organs of woman announces the advent of puberty; and its coincidence with the maturity and escape of the ovarian ovule, as well as its periodical appearance until the termination of fertility, establishes between this phenomenon and the heat or 'rut' (œstrum) of animals a very close analogy. Kahleis, Fuschs, Spinola, Numann, and others, have observed this in the cow, and have also noted that the discharge occurs regularly at intervals of nineteen or twenty days when the animal is not giving milk or in calf. The hæmorrhagic flow appears two or three days after the commencement of 'rutting,' and when this is most intense. The amount of blood does not exceed one or two ounces, and the coagulated clot remains in the vagina until it is expelled with the urine. There can be no doubt as to its source. If at the moment when traces of it are perceived externally, the cow is killed, and the inner surface of the uterus examined, blood will be seen exuding from the cotyledons. And this phenomenon has been proved to extend beyond the bovine species, for it has been witnessed in the mare, bitch, cat, rabbit, etc.; and in the red-coloured mucus of the vagina and uterus multitudes of blood-corpuscles have been found.

"With regard to the season at which this 'heat' takes place, it has been observed that it is usually in the spring-time, when food becomes plentiful, especially with herbivorous animals. The carnivora are in heat during winter. The mare is usually in heat from April to June, or later. With the cow, whose calf is sold at from one to two months old, with a view to utilising the milk, the season, of course, is varied—as care is taken to induce conception again as soon as the lacteal secretion begins to diminish; but it has been observed that midsummer is more particularly the rutting period. And the 'heat' in sheep, though naturally present in September, is usually only shown during summer, because the ewes are kept apart from the ram at the natural time, in order that the lambs may be born at a favourable season—the spring. . . . . The bitch is in heat from December to February, or in the autumn or spring-time. The cat is in this state in January and February, and also in the spring and autumn; sometimes the heat appears three or four times in a year, and the animal may produce young as frequently, though, in the wild state, it seldom does so more than twice a year. The pig manifests rutting in October or November—at least, that is the period when it is usually put to the male; and it may be put a second time towards the end of spring, in order to have two litters within the twelve months. The frequency and duration of the period of 'rutting' or 'heat' depend upon the age, species, and other circumstances; but it may be said

to persist, in the domesticated animals, from one to fifteen days at the most. The shortest period is witnessed in the cow and sheep, and the longest in the bitch. It is sometimes only present from twelve to twenty-four hours in some non-fecundated animals. With impregnation, however, it ordinarily ceases until after parturition; and if impregnation does not occur, it gradually disappears until the next period, which is somewhat variable. Its reappearance in the cow has been noted every month or three weeks, and sometimes at closer intervals; and in the sheep and pig it lasts for one or two days, and again appears from the fifteenth to the thirtieth day, but usually every month. When removed from artificial conditions, it is stated that the ovine species is in rut in September, that this persists only for a day, but reappears every fourteen days until the end of December. From the spring until the end of summer, it may be said the mare manifests a desire for the horse every three or four weeks, and the objective phenomena which announce it continue from two to four days. In the bitch they last for nine or ten days, and only appear in the spring and autumn. . . . . Domesticity, in assuring animals food and shelter, and removing them from risks and alterations of an erratic life, multiplies the returns of this condition. Fowls, pigeons, etc., lay despite the rigours of winter, and the domesticated mammals are in heat at short intervals. . . . . Some animals, as the mare and pig, manifest a desire for the male, and even copulate (shortly after delivery); and it is no less a fact that rutting and impregnation may, and do occur, soon after parturition. The cow, ass, and sheep, and, it is believed, the mare, will copulate with greater certainty of success the ninth day after parturition than at any other time."

Saint-Cyr (*Traité d'Obstétrique Vétérinaire*, page 41) says that the females of domesticated animals show signs of excitement during the period of heat —not only by general symptoms, but by swelling of the vulva, and an odourous glairy or sanguinolent discharge; and that, in the cow particularly, and frequently in the mare, this discharge is abundantly sanguineous. He says that this sanguineous excretion, which has been studied with care by Numann, Fuschs, Spinola, and others, is a normal phenomenon, and analogous to the catamenial flux of woman.

Denman (*Midwifery*, page 88) says: "It has also been observed that all animals, at the time of their being salacious, or in a state fit for the propagation of the species, have a discharge equivalent to menstruation, which is generally mucous; but in some instances, in very hot seasons and climates, becomes in many of them sanguineous, as I have often observed."

The celebrated Dr. Mead wrote a treatise on the "Influence of the Sun and Moon on Human Bodies," wherein, according to the prevailing notions of the time, he laboured to show that those great luminaries exerted direct influence upon animals; and, speaking of this power over periodical hæmorrhages, he says: "And this action of the moon extends even to those quadrupeds that are menstruated, for it has been observed that they generally have those evacuations about the new moon—in particular, mares and monkeys—and that so constantly that, according to the testimony of Horus Apollo, the Egyptians painted the cynocephalus to represent the moon, upon account of a certain sympathy, whereby the female of this animal has evacuations of blood from the uterus at the new and full moon; and they kept monkeys in their temples in order to point out the times of the conjunction of the sun and moon. . . . Wherefore, the moon's influence is apparent in all animals, provided irregularities in their way of living do not prevent it."

My own personal inquiries into the character of the phenomena observable in females of the lower animals at their times of sexual excitement, show that a more or less marked sanguineous flux occurs in the following: monkeys, mares, cows, sows, and bitches. In the higher monkeys, when they do not

suffer through captivity, the flow is almost—sometimes quite—as copious as in women. In some varieties the genitalia becomes swollen and brilliantly coloured, so that tomato-like vermillion-tinted masses render their condition conspicuous. The simiæ also commonly observe monthly regularities in their periods. In mares, the "pouting vent," with its incessant spasmodic opening and closing, and its rosy-coloured, highly odorous, sanguino-mucous weeping, proclaims the period of heat. In the cow the period recurs every three weeks, and is of brief duration; but towards its conclusion it is marked by a distinct flow of blood. Mr. Simpson, of Wray Park, whose accurate observations upon his splendid herd of Jersey cattle during fifteen years may be implicitly relied upon, informs me that the duration of the rut in old cows is briefer than in heifers, but is short in both; and his herdsmen have often to be nimble in getting the services of the bull. When the blood appears the heat usually subsides, and intercourse is refused. Cows have been known to have excessive loss, resembling the menorrhagia of women. Mr. West confirms these observations from a very wide experience as a veterinary surgeon.

It may here be appropriate to mention that evidence is not wanting to show that the menstrual act in milch cows is apt to derange the creatures' milk temporarily; in some instances rendering it unfit for consumption by suckling infants. It is maintained by certain observers that the milk of menstruating women also deteriorates during the catamenia, when the latter occur during lactation; and I have met with many corroborative examples, though in other cases no particular harm appears to have ensued. The probability of derangement arising from this cause receives some confirmation from the changes which are known to take place in human milk at the catamenial periods. Dr. Barnes states that microscopical examination of milk yielded by menstruating women shows a considerable production of colostrum corpuscles at these epochs. Such milk seems to resemble that first secreted after delivery (colostrum), and in cows this first milk, or "beestings," is known to possess very peculiar properties. It is, for instance, in them so highly albuminous as to coagulate firmly on the application of heat; the resulting *magma* resembling pretty closely custard-pudding; indeed, in country places I have known "beestings" used for the purpose of making such puddings; and, as in women, this first milk is believed to exert rather an aperient effect upon the offspring. Its colour is much yellower, and its aspect is very different from that of ordinary milk. My inquiries lead me to believe that, besides the alterations recognisable microscopically, there are other, perhaps more important, changes in the composition of menstrual milk, affecting materially not only its corpuscles, fat, and casein, but its chemical constituents, salts, sugar, etc. Probably it is to impairment of the quality of the milk by subtle changes of the kind indicated that the deleterious results are attributable.

Acute emotions of a distressing character, particularly violent anger and jealousy, have been known to alter a mother's milk so completely as to excite symptoms of sudden poisoning, and even convulsions, in the infant.* The secretion must therefore obviously be highly susceptible of rapid modification in its structure and composition.

Probably, in a herd of dairy cattle, the admixture of the milk of one or two rutting cows with that of the rest of the herd is of but little consequence;

* I lately saw a marked instance of this in consultation with Dr. Milson. Instances of this have lately been recorded by Dr. Napier (*Lancet*, August 19th, 1882), and by Mr. Walford (*Lancet*, September 2nd, 1882); and my own inquiries have yielded support to this view. Two infants, supplied exclusively from separate cows, showed periodical symptoms of bowel-disorder, so that, in each instance, those in charge of them requested that the children might be supplied from the mixed milk of the dairy instead of from selected cows.

XUM

and fortunately, as already stated, the duration of the rut in ruminants is usually brief. Besides, if I am rightly informed, milch cows, like women, do not always manifest symptoms of œstruation during, at any rate, the earlier months of lactation, though they commonly do, and the heat may supervene at any time. But when, as of late has become a growing custom amongst well-to-do people, hand-fed infants have milk supplied exclusively by one cow, periodical disturbance may be manifested in the infant, corresponding with observed periods of heat in the animal.

In sows the vulvar swelling is considerable, and a sanguineous exudation may appear towards the termination of the period of heat, particularly in well-fed animals. In bitches the flux is often abundant and prolonged. Mr. Bartlett informs me that the surest method for procuring impregnation in the bitch is to permit access to the male only when the flow of blood is well established—a statement which is corroborated by information for which I am indebted to Mr. Bird, J.P., who has bred many bloodhounds. This has some bearing upon moot questions relating to impregnation, conception, and ovulation. In the well-fed carnivora the heat appears to be sometimes prolonged, when not appeased, by sexual gratification.

Besides the fore-mentioned creatures, personally observed, information respecting other female animals has been given me by reliable observers. Thus, the periods of heat have been recognised in the hippopotamus in the Zoological Gardens. These recur monthly, and the creature's period of gestation is only seven months, which strikes me as remarkably short for so huge an animal; it has been accurately noted, however, on three occasions. The smaller tapir, which has recently bred in the Gardens, is believed to gestate for double this period. Such apparent anomalies show the importance of inquiry into specific or generic peculiarities. In the equine species, which is thought by some to have ancestral affinities with the tapir, the mare goes with young for a long period, her time of gestation being eleven months, while that of the cow is only nine months, as in woman. There is an old saying, known in country places, that "A hare and a mare go a twelve months"—that is, the hare goes one month, while the mare goes eleven.

I am told that she-asses come to heat regularly like mares, but that the periods recur only about every five weeks. They also exhibit swelling and weeping of the vulva. Sheep present similar phenomena, but they are not strongly marked, and recur only seasonally—*i.e.*, in warm months—for a few times, and are of brief duration. Cats are known to have recurring periods of heat, but how often I am not reliably informed. Doe rabbits are well known to manifest periodic heat-symptoms, and their vulva orifice, vagina, etc., show deep purple turgescence.

It is evident that animals susceptible of domestication become much more prolific under the agency of a constant supply of food, shelter, and such-like advantages, and that, in lieu of the merely seasonal manifestations of sexual aptitude displayed by them in a state of nature, they acquire a much more sustained, and frequently renewed, capacity for reproduction, and with it comes the exhibition of aptitude in the characteristic manner peculiar to each creature. As Mr. Darwin says, "Domestication, as a general rule, increases the prolificness of animals and plants." Domestication for the lower females, and civilisation for the human female, have respectively so operated upon their reproductive systems as to enhance their powers and repeat, in the intensification, the frequent display of catamenial phenomena.

The foregoing evidence appears sufficient to establish the fact that the lower females present phenomena analogous to those of menstruation in the human female, and even to prove their identity. The facts also seem to justify the chief inference I have ventured to draw from them, namely, that the function is subordinate to the law of evolution, and is related mainly to the

degree of evolution to which the sexual system has attained, such evolution being always correlated with other evidences of organic development. They enlighten us respecting the correlations of the reproductive functions in the mammalian world ; they show us the singular analogies that exist between the seasonal rutting and delivery of the lower females, and the still observable tendency to commence menstruation, and to bring forth children, in the warmer months, of the human female, that relic of a primordial seasonal aptitude for procreation, the impress of which still remains, and, to some extent, governs the breeding times of humanity. They show us that the rare menstruation at long intervals—six, four, or three months—of girls at puberty, is analogous with the primitive seasonal heat of the lower creatures, and is a repetition of a reversion to an ancestral condition, often imitated again at the decline of sexual life. These and allied facts will find their application, and be constantly appealed to in illustration of the physiology and pathology of the function in womankind ; and I trust it will become clear to you that the information acquired through the study of the comparative physiology of menstruation is neither superfluous nor useless, either in the scientific discussion or in the practical application of our knowledge of the subject.

REWARDS FOR DISCOVERY IN DISEASE.

PROFESSOR TYNDALL remarked lately that millions of human beings have died in order that other millions of bacteria might live. Innumerable germs exist which resort to animal bodies as their grazing-ground. Zymotic sickness in a hundred forms results from their natural craving for sustenance. No one has been more active than Professor Tyndall in combating this pardonable propensity. He has for years past been engaged in boiling and suffocating and starving every germ he could bring within his dominion. At last an emotion of pity has stirred even him. At his instance and that of Professors Sanderson and Simon, who have been as uncompromising enemies of zymotic germs as himself, a flag of truce is being held out by the Grocers' Company. That worshipful and wealthy guild has, as we mentioned yesterday, offered a comfortable home for one class of germs, if it will migrate from animal substances and reside where it is bid. The Grocers' Company is willing to give a handsome prize for the best improved dwellings for the germs of cowpox. It desires them to be supplied with sufficient food, and to be encouraged to multiply abundantly and indefinitely. There are Indian philanthropists so benevolent that they erect hospitals for infirm or destitute animals, from elephants down to fleas, and hire human diet for the forage of those which require it. The hospitality of the Grocers stops one stage short of this. A condition of their undertaking is that the vaccine contagium shall cultivate itself apart from the animal body. But although the company thus limits its scale of nutriment, it guarantees the ablest and most vigilant human attendance and supervision. The liberality of its Quadrennial Discovery Premium will secure the best intelligence in the scientific world for the office of steward and chamberlain to the contagious germs to be lodged and looked after at its cost.

All this trouble is not to be expended on any tribe of bacteria, even the most respectable, as is the vaccine contagium, for its own sake. Though the germs will not thrive the worse for the interested motives of their munificent patrons and hosts, a selfish object is at the bottom of the lavish display of generosity. While man thinks himself the lord of creation, he is regarded in a very different light by other descriptions of beings. The universe is full of animalcules, living where and how they can, with a distinct predilection for

XUM

animal food. When they have the opportunity they occupy the human body. Zymotic maladies represent their ingenious attempts to convert it into lodging and aliments. Fortunately, various kinds which have a common liking for the same prey are unable to gratify their taste without coming into collision. Germs of cowpox and germs of smallpox cannot share a human body amicably together. Cowpox eats up whatever the other would enjoy, and leaves, from the contagious point of view, a desert behind it. This property renders vaccine contagium so desirable an inmate that science, for the advantage of humanity, would be glad to increase its vigour instead of treating it as the ordinary bottled germs of Professor Tyndall's laboratory. The problem is how far the germs of cowpox possess the faculty of reproducing and reinvigorating themselves independently of the animal substances with which they prefer to amalgamate. Incidentally, the effect of discovering that these germs may be propagated and transmit their preventive power without the aid of an animal medium might be made a means of abating vulgar prejudices against their use. Only an exceptionally timid and susceptible imagination could apprehend a risk of incorporating through the vaccine germ some vicious vegetable proclivity. But science means in the first place and directly to track an unknown order of existence, whatever may be the precise practical destination of the results at which it arrives. Science loves the latent and unknown in the spirit in which the Norman kings are said by chroniclers to have loved the greater beast of chase. The presence of countless legions of animalcules following their own good pleasure in the universe, marrying, and giving in marriage, making peace and war, without census or registration, is a shame and grief to philosophy. That the minute and sleepless observation of years is necessary to grasp the clue of their invisible meanderings is nothing to modern research. The mediæval monk gave a life to the illumination of a missal. A modern physicist compresses a life of thought and reasoning into four years of watching over a phial without reckoning the chance that a rival insight quicker by a day may rob his investigations of the glory of acknowledged success.

A competition such as this announcement invites would be impossible if science did not comprise within the ranks of its votaries a multitude of minds willing and prepared to dedicate themselves from an absorbing enthusiasm to the study of the inner provinces of nature. Philosophy needs its reserve of intellectual leisure in the same sense in which men of leisure are useful in politics, and in art and letters. Prosperous ages and countries keep their leisurely classes on the terms that the individuals work their hardest with slender hope of fee or reward. Science at the present moment is concentrating an amount of skill and industry, which otherwise invested would produce a crop of mitres and ermine, on inquiries from which human health and happiness will gain much and the investigators little or nothing. It is one of the luxuries of civilization that it can despatch, on the instant, a relief gang of trained pioneers on whatever enterprise may be most likely to conduce to its convenience. They are workmen who never strike for wages or shorter hours. Generally, they are unconscious that they are not toiling simply for their own profit. When they are told to direct their exertions to a spot at which especial benefits are promised to human life, they accept the commission as gratefully as if the kindness were to them. A gift of a thousand pounds for information of immense importance to mankind will appear to them a reward for doing what they like best. Yet money could not be more remuneratively bestowed; and it is an argument for dealing gently with laid-up corporate riches that they furnish a fund for similar grants. As a land may gain by a class not obliged to toil after money-making, so it may gain by the possession of a certain proportion of capital at leisure. Money generally has its indispensable ends, from which it refuses to be diverted. Daily

practical wants are inexorable, and ordain for the majority of incomes their commonplace aims and purposes. A great livery company has its unappropriated revenue, which it is free to invest as it pleases. At one time the public was disposed to suspect that the whole was simply squandered, and appearances pointed that way. For the last few years an altered temper has manifested itself in civic expenditure and in civic administration. The institution of a Quadrennial Discovery Prize by a city company was itself marvellous and admirable. The appointment of a scientific committee to advise the Court seems more surprising still. No bodies in existence might have been supposed once to have less connection with research, except with the culinary art, than the London guilds. If they follow vigorously their new system of endowing technical education and subsidizing the exploration of the dark places of nature, the accustomed sarcasms on their character and practices will come to be believed a vulgar error.—*The Times.*

THE FELLOWSHIP DEGREE.

At an examination for this degree, held by the Examining Board of the Royal College on June 8th, four candidates presented themselves, of whom three passed. These were, C. Sheather, London; W. B. Walters and E. T. Cheesman, both of the Army Veterinary Department.

THE APPOINTMENT OF PRINCIPAL VETERINARY SURGEON TO THE ARMY.

As the period for which the appointment of Principal Veterinary Surgeon to the Army is held is limited to seven years, Mr. Collins' tenure of office expired on the 28th ult. His Royal Highness, the Field Marshal Commanding in Chief, having spontaneously offered the appointment to Inspecting Veterinary Surgeon Dr. George Fleming, he has accepted it; and we have no doubt that while the interests, reputation, and advancement of the Department will be as carefully attended to as they have been in the hands of his able predecessor, the welfare of the entire profession will be as warmly promoted by him as heretofore.

Proceedings of Veterinary Medical Societies, &c.

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION

The annual meeting of this Association was held at the County Hotel, Newcastle-on-Tyne, on May 25th, 1880, the President, D. M'Gregor, Esq., Bedlington, in the chair.

There were present: Messrs. G. Hunting and C. S. Hunting, South Hetton; Grieve, Blaydon, Dudgeon, and Stevenson, Sunderland; Awde, Stockton; Pringle, Gateshead; Mulvey, Bishop Auckland; Nisbet, Fence Houses; Farrow, junior, and Peele, Durham; Sheather, London; Elphick, Stevenson, Wilson, W. Hunter, and the Secretary, Newcastle-on-Tyne.

Letters and telegrams of apology for non-attendance were read from Professors Duguid and Walley, T. Greaves, Esq., Manchester, and several members of the Association.

Mr. Blanch, of Thornley, was unanimously elected a member of the Association.

The PRESIDENT then read his inaugural address as follows :—

Gentlemen,—As you have been pleased to elect me as your President for the ensuing year, I beg to thank you for the honour you have conferred on me, and though I feel incompetent to fill the place of many able men who have been Presidents of this Society since its commencement some nineteen years ago, I have accepted the distinction, feeling assured that the members will be patient and lenient towards my deficiencies in conducting these meetings.

In looking back to the first meeting of this Society in 1864, I am glad to see that there are still a number of the original members present. Some death has removed, others change of residence. Amongst the latter, Mr. Armitage, the founder of the Society. I understand he has left the profession, but I hope he is flourishing in his new sphere, and that some day we may have him in our midst again. At one time, through the lukewarmness of some of the members, this Society collapsed, and remained dormant for a time ; but again it revived, and now I am pleased to see it flourishing, and hope it may long continue to bear good fruit.

I think, gentlemen, that there are none of us but can say they have reaped some benefit from our meetings. For myself, I must say I have derived great benefit, and so must all country practitioners. They have fewer opportunities of intercourse with their professional brethren than those in large towns, and are apt to get rusty, running in the same groove year after year. Even though they do read the veterinary journals it does not keep them up to the mark as do our friendly meetings, interchanging ideas, giving the history of peculiar cases, and eliciting different views of such cases, but all with the same object of elucidating truth. As the aim of all associations is the elevation of the profession, and the discussion of subjects important to veterinary science and the general public, these aims shall, I assure you, not be lost sight of during my term of office, and any feeble stimulus I can afford shall be heartily to promote the welfare of the profession.

I should have liked to have gone into the pupilage question in my paper, but that was so ably handled by Mr. Stephenson at our last meeting that there is little left to say. I think, however, that the majority of the members were against it, and I for one hope it will not become law, knowing well it will debar many good men from entering the profession. As Mr. Stephenson said, let the examinations be as strict as they can be made, both practical and theoretical, but do not put such an obstruction in the way of a poor man, who has a love for animals, and may have an inherent aptitude for the practice of veterinary surgery, and who, if the way to trying to pass was made easy "pecuniarily," would, by his own perseverance and good common-sense, pull through creditably, where those having advantages far above him might fail. In the medical profession the old apprenticeship clause has been set aside for, I believe, the last sixty years ; and if they saw the futility of such an act, I don't see why we should try to make it compulsory in our profession.

In reference to the change in the Examining Board, I regret, in one sense, that we should have to dispense with the services of members of the medical profession. So many eminent men have been connected with the Board since the Royal College was incorporated. Yea ! some of the most eminent men the world has ever produced, such as Syme, etc. Although it cannot but be deeply deplored by all whose sympathies extend beyond the limits of our own profession that we should lose the co-operation of such eminent men, still I think no valid objection can be urged against the new system, that the Examiners should all belong to the veterinary profession. At the same time, were there a little more fraternising, both socially and professionally, between

the two professions, it would be better for both, as each can assist the other in many ways.

The subject I wish to bring before you in my inaugural address is one that has of late been above all others the most frequently before this and other societies, and also the general public; but I think it is not yet quite exhausted. I mean Influenza Fever, or "Pink-eye," a name it has recently received, but how, or from what source, I have never learned, but I think it must be a "Yankee" term.

In commenting on this disease, which every now and then visits us in such a malignant form, I may point out that it is no new disease, but has been prevalent in this and other European countries for the last two hundred years; and had there been any writers on diseases of the lower animals before then, I daresay we would have had statistics showing that the same disease had prevailed centuries before.

The oldest book on veterinary medicine to which I have had access is Mr. Boardman's "Veterinary Dictionary," published in 1805, and he describes the symptoms of Influenza much the same as we find them now; and he quotes from an older writer (Mr. Gibson) as follows:—"The Jaundice with the staggers are sometimes epidemical; there have been many horses seized with this malady." It is described to have occurred more remarkably in some seasons than others, and generally about the end of spring or beginning of summer. It is no other than a bilious fever, and seems to be the same mentioned by "Soleysel" in his chapter on "Diseases of the head caused by choleric humours," which brought a great mortality among the horses in some parts of France and Germany in the years 1660 and 1661, and afterwards in 1669 and 1670.

This is seldom universal or of long continuance in Britain, but when it comes it proves fatal to a great number of horses, probably for want of knowing the true origin and source from whence arise those various symptoms, by which the head and the whole body also are so considerably affected.

Gamgee, in his "Domestic Animals in Health and Disease," says:—"We can trace back to 1819 distinct outbreaks of the same Influenza that we witness occasionally at the present day."

In 1862, shortly after I came to the north of England, there was a pretty severe outbreak at some of the collieries, introduced then, as it invariably has been since, by new animals from dealers being put down the pits shortly after purchase, or during the incubative stage, and we lost several ponies, principally from congested lungs and liver.

Again, in 1876, it broke out in Backworth Pit as what would now be termed "Pink-eye." I recollect, when I was sent for, the horsekeeper telling me that a lot of the ponies were going blind, and when I first saw them I was inclined to believe we had "Enzootic Ophthalmia." Many of the ponies had their eyes so inflamed that the mucous membranes were protruding, a small stream of water running down the cheeks from each eye, loss of appetite, mouth hot, pulse ranging from 50 to 70. The thermometer was not in use then, so I cannot give the temperature, but it must have been pretty high. I had never seen Influenza in this form before, but after examining and watching the cases for a day I concluded it was this disease, and was corroborated in this by Mr. Hunting, who saw them a few days after. He told me that he had often seen the same symptoms shown. The disease had been introduced by a young pony put down the pit a week previous to the outbreak, but it showed no symptoms of the disease itself, having probably only recovered from it when we bought it. In this outbreak it was not nearly so contagious as it has been recently, as out of some seventy horses and ponies, in stables all connected with each other, only twenty-six were

XUM

affected. There were no deaths, and the worst cases were better in six and eight days. Some were fit for work in three and four days.

I had no very serious outbreak again until July of 1881. On the 6th of that month eight ponies were bought by the Seaton Delaval Coal Company from a dealer in the county of Durham. One of them, a six-year-old pony, said to have come direct from hard work, was put down the pit immediately, as we were in much need of him. This was against our rule, as for many years previous to this no horse or pony was allowed to be put into pit for at least a fortnight after purchase; but necessity has no law. This pony never showed any symptoms of disease itself, but ten days afterwards one pony fell dead at work from Congested Lungs, and several others were showing symptoms of Influenza Fever. It also made its appearance amongst the other new ponies which were in the field at bank.

I immediately took steps to prevent any animal being worked when under the fever, by examining them minutely, daily, and having those affected removed to a stable by themselves, and used disinfectants freely through all the stables. The disease, however, spread rapidly until nearly the whole stud was affected.

By the end of September the disease died out, with loss of two ponies and two horses out of fifty-six cases. One pony and one horse died while at work, by being put to work while under the influence of the disease. One pony died from a clot of fibrine forming in the heart; and one horse from irritative fever and Laminitis of all four feet, the result of the disease. Several of these cases resulted in Laminitis.

In a neighbouring pit belonging to the same owners one case of a very virulent type occurred (carried there by the head horsekeeper), but it was immediately removed to an old stable, and a temporary loose-box prepared, and one man attended it and no others, which was the means of checking it here, as we had no others. This case recovered, but resulted in Chronic Laminitis.

As a sequel of the outbreak here, I may mention that several of the worst cases amongst the heavy horses, after recovery, being too heavily worked, became subject to Disease of the Bowels, and several died from ruptured bowels, showing that the muscular system was so weakened that from slight disorders the muscular coats of the intestines easily give way.

On February, 1882, "Pink-eye" again made its appearance at Ashington Colliery, brought by some ponies from Newcastle. All the farm horses were first affected, then the coal-cart horses; sixteen in all were ill, but all recovered. To prevent the disease getting into the pits, neither I nor the farm steward, who had the management of all the animals, ever went down the pits while the disease existed above-ground; but on March the 4th two ponies fell dead at work in the pit, and on making a *post-mortem* examination on these, I found that Influenza Fever was the cause of death, and told the owners so. How it got there I cannot tell, as every precaution had been used. It soon spread, as when I visited the pit for the first time I found six ponies affected. As trade was brisk at the time, the owners expressed a wish that I should endeavour to keep the pit at work, and that they would purchase as many new animals as were necessary to do so. I told them the great danger was working the animals when affected, and that to introduce new animals was only to prolong the affection, and it would be better for them to introduce hand putting for a time. This was done; and by the beginning of April the pit was clear of disease, and on full work; had not lost a day's work during the time, and they were not many scores per day short at any time while the disease prevailed. Out of fifty-nine cases, two ponies and one horse died. The ponies dying before I saw them, the horse from Congested Lungs. Only three ponies and one horse escaped being affected out of a stud of sixty-three horses and ponies.

XUM

Now comes a peculiar incident in the spreading of this disease. About the middle of April the same year, a neighbouring farm to this colliery, the horses of which had been daily going and coming for coals, etc., had escaped so far. An entire horse belonging to Newcastle ("Perfection" by name), I learned afterwards, had "Pink-eye" in early part of year, and was attended by Mr. Elphick, served a mare there, and in about a week afterwards the mare had Influenza Fever, and a few days after every horse on the farm was affected. The next farm to this the horse served another mare with foal at foot, and some days after both mare and foal were very bad. The foal was perfectly blind for some days, and I was afraid would not recover. However, by careful nursing both mare and foal did recover. I traced the spreading of the disease by this horse to seven different farms in my own neighbourhood, always making its appearance in the mare served first. I also learned that this horse infected several mares in the county of Durham.

Now this is a matter for investigation. Was the horse the medium of contagion, from the poison not being thoroughly eliminated from its system since its illness some months previous? Or had the mare at Ashington contracted the disease at the colliery, and been in the incubative stage when served? And if so, would she have come in season, or remained in season so as to take the horse? I was inclined to the latter hypothesis until a day or two ago, when I went to the owner of the horse, and also the man who travelled him, when they confessed to me that the first mare the horse served last year had "Pink-eye" seven or eight days afterwards, and he, the owner, had no doubt in his own mind that it was from the horse that all the mares were affected, and that he had to stop travelling him long before the end of the season.

I may mention that when the man was taxed for spreading the disease, he carried a certificate of health from some veterinary surgeon, and showed it to all farmers, saying that he could not have been the means of carrying infection.

There is another peculiarity shown in this outbreak, in the susceptibility of some animals to contract the disease, and the non-susceptibility of others. On one farm where two mares were served the same day, one had the disease and was barren; the other had not, and has this year a foal. I know also that the horse left several foals, so that all could not have been affected. This proves that though all had the germs of disease sown in them, each had not the requisite soil for its development.

All mares that were affected were barren.

In the month of March, 1882, this disease was also introduced to Bedlington Colliery by a horse in which symptoms showed a few days after its arrival. Other seven horses were affected, but being immediately removed to a hospital was the means of checking its spread. None of these were very bad cases.

On the 19th of December it again made its appearance at Bedlington Colliery, and in the most virulent form that ever I have had to contend with. We had received two new horses on the 17th of November from Durham, where, I afterwards learned, the disease prevailed. One of these horses had been blistered on sides and throat. We kept them separate from all others for three weeks, and, seeming all right and working well, they were then placed alongside other horses in stable. On the 19th of December, a horse standing next to one of these new ones was said by the horsekeeper to be foundered on all his feet. On visiting him I found the animal suffering from severe Inflammation of Lungs and high Fever; pulse 70, and temperature 105°. Laminitis it undoubtedly had also, and in all four feet, so bad that I had great difficulty in getting the shoes removed.

Next morning the pulse was imperceptible, and temperature 108°, the highest I had ever recorded. Death took place that same day.

I found out afterwards that this horse had been dull and sluggish at work for a day or two previous to this, and had been partially off his food for several days; but as he was grossly fat no notice was taken of this.

Post-mortem examination showed the lungs in a frightful state; both, when cut into, were like great clots of coagulated blood; neither bronchi nor blood-vessels perceptible, and when pressed, could be broken up like blood clot. The left ventricle of the heart contained a large clot of fibrine, and the right a quantity of black liquid blood. The liver was much enlarged and of a yellow colour.

On the 26th of December another horse was brought in from work suffering from Inflammation of Lungs so bad, that I did not expect he would live many hours. Pulse was 80, and temperature 105½°; that peculiar expression of countenance expressive of Congested Lungs, protruding head, with fore legs set apart, etc. On applying hot-water cloths to the chest continuously for two hours, allowing plenty of fresh air, and cold water to drink, etc., the dangerous symptoms abated, breathing became less hurried, more cheerful countenance, and he began to pick a little food. On the 27th looked much improved, and I had hopes of recovery.

On the 28th, however, colicky pains came on, and from rolling about under the spasms aggravated the lung affection, and death took place the same night. *Post-mortem* appearances were much the same as last case.

On thinking over these two cases, I concluded that they had been under the fever for some days before they were taken notice of, and knowing well what I had to contend with, I determined that no others should suffer under the same disadvantages. I commenced by carefully examining every animal in stable night and morning, and took the temperature of every one once a day. Whenever I found the temperature above 101½°, had the animal removed to hospital. The stables were whitewashed with hot lime, the channels washed daily with Jeyes' disinfectant and plenty of water, and used other disinfectants freely; but all was of no avail in checking the spread of the disease; but I had the satisfaction of having no more deaths, though several were so bad that they were despaired of both by myself and others. Out of thirty valuable horses, twenty-seven became affected; all were more or less affected in lungs, some of them very bad. One had suppuration and abscess of left lung, large quantities of pus being expectorated, and a very fœtid breath existed for a considerable time after recovery. Several of the worst cases have yet (four months after recovery), on a little extra exertion, a difficulty in breathing, and a weakness of the heart's action, no doubt from films of fibrine adhering to the valves of the heart. Many of these cases had diarrhœa about the fourth or fifth day after appearance of disease, and I found that in this, as in former outbreaks, those cases accompanied by diarrhœa got sooner well than those not so affected, showing, to my mind, that the poison was more quickly eliminated from the system by watery evacuations.

Only three horses out of thirty escaped the disease. One was an old horse, one had the disease in March of 1882, and the other, the new horse, which I blamed for bringing the infection. I have found that animals that have had the disease once will not readily take it a second time, but would not like to say they will not.

On January 23rd we were clear of disease, and all were fit for light work, a little over one month from its outbreak. Since then there has been no fresh outbreak in my own practice, and I believe the country is clear of it at the present time.

I have found from experience that where animals are worked, let it be

ever so lightly, after fever has set in, the chances of recovery are small; therefore perfect rest is essential. As there is frequently a tendency to fever of the feet, I have all the shoes pulled off at the early stage. This not only relieves the hoofs, but also allows the animal more freedom to move when there is great debility. Fresh air in abundance is of the utmost importance, with cold water to drink. This, with good nursing, grooming, etc., I have mainly depended on for pulling through even the worst of cases. Get men that can be depended on to attend your patients night and day; have the legs hand-rubbed three or four times a day, and warm flannel bandages applied loosely from hoof to above knees and hocks; the bandages while off to be hanging beside a fire, or, what is better, placed in an oven, and always put on warm and perfectly dry, the whole body frequently groomed, and then sheeted. Let them be enticed twenty times a day, if necessary, to eat little bits of anything they will take from the hand; bread I have found good when all else was refused. The same way with fluids; hay-tea, linseed-tea, oatmeal gruel, etc. I have over and over again seen when an animal was unable to move from the corner of his box, when attended to in this way, would take a little nourishment now and again from the hand; and it is wonderful to note the changes in animals that are well nursed and cared for. Giving drenches I have discarded, and what medicine I give is always in bolus. An expert can even give quantities of stimulants in form of ball without the least disturbance to the patient, whereas the very lifting of the head to administer a drench, when there is great debility, is sufficient to cause death; and I have no hesitation in saying that many animals are killed by pouring medicines in in form of drench. When there is congestion of the lungs, I think there is benefit derived from hot-water cloths, and even mustard applied sparingly; but I think severe blistering very objectionable, as it only irritates the animal and increases the weakness, a thing you should of all others avoid. Nursing and plenty of pure air, I maintain, are everything in the treatment of this disease.

That Influenza Fever is highly contagious I think no one who has seen much of it will dispute, and that like all infectious and contagious diseases it is a specific, and has a specific poison germ of its own, the same as Scarlet Fever and Smallpox in the human subject.

That it is readily transmissible from one animal to another, from the incubative stage up to some weeks after recovery, and in some instances is communicable even to the human subject, as testified by myself in several instances, when I have seen the attendant laid up for a time by the same fever; and a doctor of this city told me that while the disease was so virulent amongst the horses last winter it also was epidemical in the human species. That when once introduced in this country, it is kept up and propagated principally by unscrupulous horse-dealers, who not only conceal the existence of disease, but deny they have it, sending out animals to all parts of the country when in the incubative stage. That it is also propagated by foul and unhealthy stables and bad management there is no doubt, and by public water-troughs, or even ponds by the roadside, which are open to all comers, etc.

I believe the mortality in towns is much greater than in the country, mainly owing to having purer air and less crowding in the country.

That the disease should come under the "Contagious Diseases (Animals) Act" in a modified form I think is necessary, and I think that some day it will do so. The loss sustained by the country of late years will be the means of inducing Parliament to pass some Act to put a stop to unscrupulous dealers and others who knowingly send out animals to all parts from infected stables.

Gentlemen, the important question for us to consider is, what is the cause

XUM

of these periodical outbreaks, assuming such a malignant type at one period, and so much less at another? Is it that a specially poisonous germ is developed at one particular time more than another? or is it owing to the peculiar condition of the animals at times, so that the effect of the "germ" is twofold more serious than at others? Or is it owing to the condition of the atmosphere causes the same disease to become so malignant at one time, and to assume so mild a form at others? These are questions that have often passed through my mind, and, I doubt not, have also yours. I put this before you now, in the hope that the old proverb may be fulfilled to-night—"In a multitude of councillors there is wisdom."

On the motion of Mr. STEPHENSON, who observed that there was much matter for thought and discussion in the President's address, its further consideration was adjourned to the next quarterly meeting of the Association.

The discussion on the paper read at the last meeting (subject, "Pleuro-pneumonia Contagiosa") was then resumed. Mr. Stephenson exhibited a most interesting specimen of portions of lungs from a cow slaughtered while suffering from Pleuro-pneumonia Contagiosa, showing that a portion of the lung which had been at some former time attacked with the disease was encysted and partially detached; and in other portions of the lungs patches of tissue more recently invaded by the disease. This animal had been on the farm for some months, and was apparently healthy until a few days before slaughter, but the *post-mortem* examination proved that for a long time past she had been capable of transmitting the disease. A lively discussion ensued, in which all present joined.

Votes of thanks to the President for his valuable address, and to Mr. Stephenson for his interesting specimens, brought the meeting to a close.

The annual dinner of the Association was afterwards held in the dining-room of the hotel, and was well attended by the members and their friends. The cloth having been removed, and the usual loyal and patriotic toasts duly honoured, a number of prominent veterinary topics were discussed, and a most enjoyable evening spent. WILLIAM W. SMART, *Hon. Secretary.*

CENTRAL VETERINARY MEDICAL SOCIETY.

AT the meeting of this Society on the 3rd May, the following Fellows were present:—Messrs. J. Rowe, G. R. Dudgeon, A. B. Daniel, A. Broad, H. W. Caton, G. Gray, C. Sheather, F. W. Wragg, J. Broad, Arthur Broad, T. Moore, and H. K. Shaw, who occupied the chair. Among the visitors present were Messrs. W. F. Mulvey (Bishop Auckland) and D. Dudgeon (Sunderland).

The discussion on the subject of Mr. Hunting's essay ("Bent Legs in Horses") was commenced by

Mr. DANIEL, who said that the horses of the Tramway Company referred to by Mr. Hunting had been for some time under his supervision; they were shod according to an American system, the features of which were that the shoes were fitted cold, and the heels lowered to bring the frog well on to the ground. The lameness so prevalent proceeded almost entirely from bruised heels, though he did not think the percentage of bent legs from this cause was so great as had been stated by the essayist. Another injurious part of the system was the absence of toe-clips, as the shoes were forced back upon the heels. He considered Mr. Hunting was quite right in attributing bent legs to pain in the feet.

Mr. SHEATHER thought the number of bent legs due to pain below the knee was not so high as the essayist had imagined, his experience with regard to the tramway horses having mainly originated that opinion. He knew numbers of horses with bent legs which were well shod and had

no disease in their feet. In the instance given by Mr. Hunting the shoeing was undoubtedly bad, and failure alone could result from the carrying out of such principles; yet he did not think the bent condition of limb was wholly due to pain in the feet: in some instances he thought it might be produced solely by the style of shoeing; the American shoe was not so thick at the heels as the English, and therefore more strain was put upon the flexor muscles by their use. He also alluded to the great muscular exertion required for the frequent starting of the heavy trams, thinking this would tend to account for much weakness of limb, and then drew attention to the fact that the flexor muscles received assistance in supporting the weight of the body from two "bracing" structures, a band of ligamentous tissue opposite the lower third of the radius, and a strong ligament just below the knee. To relieve strain upon the flexor muscles the horse bends his knee, and allows these ligaments to take a great share of the weight. He had frequently found them thickened and sprained in bent-legged horses, and said it was matter of ordinary observation that horses, to ease their limbs, endeavoured to stand with their heels on higher ground than their toes, so as to relax the flexors. He had found tips injurious, from the greater strain put upon the tendons.

Mr. BROAD considered Mr. Hunting deserved praise for throwing light on his subject, and showing what might frequently be a cause of bent legs; yet he did not think the majority were attributable to corns or other lameness, but rather to overwork and continued muscular strain. He was not of opinion that mere bending of the knee would induce contraction of tendon or of muscle—for this to take place the heel would need to be raised, and that for a considerable time without interval. He had had his attention directed to many bent-legged horses whom work did not appear to distress; but in some instances, when the distortion was great and the upright position hardly ever assumed, he considered that work caused pain, through the unnatural position of the bones throwing immense strain on the ligaments and muscles.

Mr. GRAY corroborated the essayist by saying that he had never seen a case in which there were corns of long standing without bending of the knee supervening.

Mr. CATON thought that a very great predisposing cause of bending of the legs was a weighty condition of body. He had observed its occurrence more among heavy, full-conditioned horses. Shoeing he did not look upon as a frequent cause of the deformity. He had seen many cases where horses were shod on the English principle with thick heels. Recovery from bent knees and from contracted tendons was often seen after the horse had been sent to grass for two or three months, or worked upon the land. Of the curability of corns, too, he was convinced, and quoted several instances.

Mr. T. MOORE was of opinion that a distinction should be drawn between legs which are permanently bent and those which only suffer in this way temporarily; in the latter instance the cause may be foot disease, but in the permanent cases he would refer to the shoulder-muscles for the origin of the defect. Bearing in mind that the muscles were the agents in preserving the straight condition of the limb, we should look to the extensors for the seat of the mischief in very many cases. Bent legs were, he said, commonly seen in young horses, from their being called upon to undergo excessive exertion before they were fit to endure it, and in high-stepping horses it was a frequent defect; the extensors having more strain than the flexors, the balance of opposition between them was not maintained.

Mr. ROWE considered that the majority of bent-legged horses would be found to have sound feet, but that many acquired this defect as the result of bad shoeing. In cases of sprains and weakness about the fetlock, he said

XUM

he had found great benefit derived from using a shoe with a very high "patten" heel.

Mr. SHAW said he had inspected the horses of the company alluded to, and bore witness to the faulty state of the shoeing in vogue, also to the number of corns and sandcracks seen. He thought that foot lameness and strain of the flexor muscles were each causes of bent legs; and with regard to the ability of these horses to do work he should not consider it was a question of cruelty, unless in those instances where there was atrophy of the muscles of the shoulder. On the subject of corns, he agreed with those who said, "Once a corn, always a corn." He had tried all methods of shoeing advocated for their relief without getting rid of them.

The consideration of the subject was continued and closed at a meeting of the Society on the 7th June. Mr. Sheather was voted to the chair after the President left. Messrs. T. Moore, A. B. Daniel, R. Glover, H. W. Caton, W. Roots, A. Charles, and the Secretary, also took part in the discussion.

Mr. GLOVER said that, in common with many of the Fellows, he did not entirely agree with Mr. Hunting's opinion. Surely a large number of cases of bent legs arose from causes other than injuries below the knees. He ascribed this condition to extraordinary "wear and tear" and to a wasting, under the strain of excessive work, of the triceps extensor Brachii, the muscles of this region being chiefly employed in maintaining the perpendicular position of the leg. Foot lameness, he thought, usually produced straightening of the fetlock and pasterns, and he had seen ringbones frequently supervene on what he judged to be cases of navicular disease, and the accompanying lameness had been attributed by some to the presence of the ossific formation alone. He had noticed the horses which were purchased for this tramway company, and had expressed the opinion that they would not stand the work, as they were of slight build with long limbs, hence predisposed to give at the knees. He did not doubt that a bad method of shoeing partly accounted for the prevalence of lameness in the feet; but he had no hesitation in saying that the repeated starting of the heavily-weighted cars was the cause which produced the distortion of limb in such an undue number of instances.

Mr. DANIEL said it was in fairness desirable that all which could be adduced against the theory of Mr. Hunting should be heard; some had expressed ideas as to the important part played by the muscles in permitting crookedness of the limbs, and now a fresh reason was brought forth, this being atrophy of the triceps extensor muscle, as the result of excessive work; his own contention would rather be that this amount of use of a muscle would produce hypertrophy rather than wasting, as was seen in the legs of a dancer. The essay had touched a very practical point, for how common it was to be asked the question, "What is the cause of my horse getting so bent in his fore-legs?" To this query it behoved us to find a true answer. The opinion of the essayist was based upon observations carried over many years, embracing the inspection of numbers of horses, not one stud alone, but several, both in London and the provinces. With regard to the class of horse used in this tramway company, he would observe that not only were American horses obtained, but many English and French also, and the smallest percentage of "groggy" horses was found among the American division, although all were shod in the same manner. On a tramway in Normandy, where similar horses were used to many of those in use in the English company, the number of bent-kneed horses was only one per cent., the number kept being nine hundred; and in other companies here, where the ordinary method of shoeing was practised, the horses remained sound and straight in their legs, though they were of the same class as those in

the particular company in view. He said he felt sure that the more extended our observations became, the more it would appear that bent-legged horses were sufferers from corns.

A vote of thanks was unanimously accorded to Mr. Hunting for the essay contributed.

ALFRED BROAD, *Hon. Sec.*

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

A MEETING of the above-named Association was held on the afternoon of the 4th ult., at the Swan Hotel, Stafford. There was a good attendance of members.

Mr. William Carless, President of the Association, occupied the chair. There were also present Professors Pritchard and Walley, and Messrs. E. Stanley, D. Aitken, A. Hodgkins, G. Smith, E. Hodgkinson, W. Dale, H. D. Pritchard, F. Blakeway, F. W. Wragg, H. Collett, H. Olver, R. H. Cartwright, E. Price, junr., C. Hartle, A. Over, J. Coe, W. C. Ison, E. Meek, J. Bates, H. Stanley, E. Beddard, B. Freer, R. C. Trigger, L. C. Tipper, Hon. Sec., etc. There were also several visitors present.

The Secretary's and Treasurer's reports were read and approved, and

Mr. BLAKEWAY then gave notice that at the next meeting he would move that the sum of fifty guineas be voted from the funds of the Association towards the building fund of the Veterinary College.

On the motion of Mr. TRIGGER, it was resolved that the resolution passed at the annual meeting at Stoke, appointing Mr. Blakeway a life governor of the Veterinary Benevolent and Defence Association, in the room of the late Mr. Carless, be confirmed, it having been decided that it was not necessary that the County Association should vote a second donation to the national society in order to be in a position to give effect to such resolution.

Mr. BLAKEWAY having said a few words of acknowledgment,

The PRESIDENT delivered his inaugural address as follows :—

Messrs. Vice-Presidents and Gentlemen,—In delivering this inaugural address I feel it necessary in the first place to say that I esteem it no light honour to be selected by the members of the Midland Counties Veterinary Association to preside over their meetings.

I recognize in my election the expression of your conviction that I shall exercise my best endeavours to promote and uphold the interests of the Association, which have been so carefully fostered and brought to a fruitful issue by my predecessors.

I hope, with the assistance of the Vice-Presidents and members, I shall be able to hand over the chain of office to my successor in at least as good a condition as when I received it.

This address must necessarily be a short one, from the two facts that I have been unable, from pressure of business, to write a lengthy one and from the anticipated pleasure we have of hearing a very interesting subject well handled, as I feel sure it will be, by my esteemed friend Professor Walley, who has so generously offered to lecture to us on some of the diseases of the hock of the horse.

There are several past and passing matters which I shall just allude to, more with a view to create thought than to pass an opinion thereon.

In the first place, we have to congratulate ourselves upon the progress and improvement of the profession, and the rapid strides it has made during the last decade, and to thank those of its members who have so generously stood forward and gone to so much expense and trouble to achieve such lasting benefits, foremost among whom I may mention the name of George

Fleming, Esq., who deserves the lasting gratitude of every member of the profession.

We are on the eve of the first meeting of the National Veterinary Association, which is an outcome from the Congress held in London in 1881, and which I feel certain deserves the support of every member of the profession. If they cannot spare time to attend its meetings, they will, by the payment of 10s. 6d. annually, be entitled to receive a report of its transactions, and thereby benefit very considerably by its literature; at all events they will have the satisfaction of contributing to the support of a very laudable object.

I am very pleased to find that the exertions of our veterinary surgeons engaged in the recent campaign in Egypt have received such kindly recognition: this, I feel sure, will be a stimulus to good in future, should this country ever again need the services of our members in the battle-field.

I see reported in the VETERINARY JOURNAL for last month that the National Veterinary Benevolent and Mutual Defence Society held a special meeting at Manchester in February, whereat it was agreed to alter "Rule 2," which sets at rest the matter which has been discussed at our last two meetings relative to the life governorship.

I am also in a position to congratulate that Society on its very satisfactory financial position, and hope that all members of the profession will subscribe to its funds, and thereby assist in its good work, especially the benevolent part of its work; for I feel sure that numerous cases occur where, from death or accident, a brother member is obliged to leave his family in a very dependent state. It is very pleasing to know that, for a guinea a year, we place the Society in a position to assuage and relieve a state of grief and misery which can only be realized when borne.

I am glad to find, from the annual report of the Royal College of Veterinary Surgeons, that we are to have a supplemental charter before long, and that one of the powers obtained by it is to impose a period of pupilage with a registered veterinary surgeon before admission as a member. This, I am quite convinced, has been long wanted, and I hope that it will be put in force as soon as practicable. It is, in my humble opinion, very unfair to lead parents and guardians to believe that youths who have had no opportunity of learning the habits and conditions of our domesticated animals in health, or seen or assisted in their treatment when diseased, can be taken from school or from behind a counter, and, by attending the lectures at the College, be turned out into the world as fit and proper persons to practise the art and science of veterinary surgery. If you want to become perfect in any business you must begin at the beginning, and this, I feel sure, applies to veterinary students more, if possible, than to any other walk in life. We all know that so much is required by the public from a veterinary surgeon: he must not only know his business, but he must, by the way he goes about it, be able to imbue his employers with the idea that he can do what he professes. So many young veterinary surgeons have, to my knowledge, drifted out of the profession after passing a first-class examination, simply because they could not get their living as country practitioners. This, I think, would all be obviated by forced pupilage, if only for a couple of years. I say, let them all be properly initiated.

I see Dr. Lyons, M.P., has been making a "Home Rule" thrust, by trying to induce Lord Spencer to grant a charter for a Veterinary College in Ireland. I hope and believe his Lordship will be equal to the occasion: if not for the good of the profession, I trust he will have more regard for the poor brutes who would suffer at the hands of the so-taught Irish veterinary surgeon.

We must congratulate ourselves upon the new Board of Examiners: it is

very pleasing to know that it is at last in our power to find good men in our own ranks to examine the candidates for the diploma, without having to fall back on the medical profession, although we must all be proud of the mutual good feeling that has always, and I trust always will exist between the two bodies.

It is satisfactory to note that the Examination Committee have decided that there shall be two grades of subjects for students, the one obligatory, the other voluntary. This is certainly a step in the right direction.

I am sorry to see that the Royal Agricultural Society has decided to withhold the gold medal prize, for want of a sufficient number of competitors.

It was my intention to have made a few remarks on the Contagious Diseases (Animals) Act; but as it is likely to be so ably brought forward at the National meeting on the 8th (where I hope to meet you all), and as it will then be so well sifted, I will suffice by saying that to my mind the way in which the Act is carried out is very unsatisfactory.

Before concluding there is one other matter I wish to bring to your notice, *i.e.*, the selection of animals for breeding purposes. We are often asked to select a suitable horse as a sire, and it also often happens that we have an opportunity of persuading or dissuading clients and friends as to the desirability or otherwise of breeding from a particular mare. I hope we shall all agree to give such advice as will deter persons from breeding from mares that, from their formation or some disease, are likely to produce something that will be a source of loss and trouble, rather than profit. We have frequent opportunities of doing good to the community at large in this way, especially at this particular time of year. Also with regard to cows, if we have reason to suspect that an animal is related to a tuberculous stock, use every energy to induce the owner not to rear the offspring, especially if it be a bull, as the result of using such an animal for a couple of years might very possibly be the ruin of the owner.

Apologizing for the small amount of interesting matter I have been able to bring before you, and thanking you very heartily for your attendance here to-day, I beg to describe myself, gentlemen, very faithfully yours.

The President resumed his seat amid hearty applause.

Prof. WALLEY then proceeded to deliver a lecture on "The Principal Diseases of the Hock." He remarked at the outset that he might perhaps have chosen a subject of more general interest, but he thought that where he was addressing men who had so largely to do with the examination of horses for soundness, the subject of hock diseases must be of very great importance. It was a subject which had led, perhaps, to more controversy amongst veterinary surgeons than any other, and for that reason, if for no other, he thought it a good one to bring before them. They were perfectly well aware that of all the diseases of the hock the so-called Bone Spavin was the most important, and he referred very briefly to the anatomy of the joint in order to point out that they had in the peculiar arrangement of the bones a very good reason for the formation of bony deposits on the internal aspect of the joint. But while he desired to point out particularly, with reference to the formation of these bones, the existence of a very marked predisposing cause for Spavin, he mentioned hereditary predisposition as another very strong cause, remarking that of all animals with which they had to deal the horse was the most predisposed to bony deposits, and especially of the hock. He considered also that one of the great predisposing causes of Spavin was the peculiar manner in which the weight was thrown upon the small cuneiform bones on the inside of the hock, the articulation here differing very materially from that of the outside of the joint. The pathology of the disease might be summed up in one word—inflammation of the bone involved—resulting in the throwing out of a large quantity of bony matter upon the outside of the joint.

XUM

The symptoms of Spavin were, he supposed, quite familiar to all. In most cases there was lameness marked by one or two peculiarities. The first of these was that it disappeared with exercise; then the horse was most lame on turning on to the sound leg. Then they usually found the toe of the shoe more or less worn, and frequently the outside more worn than the inside, caused by the animal endeavouring to throw the weight upon the outside of the foot. The disease, however, frequently developed itself without lameness or other symptom by which the attendant could become acquainted with its existence, and this led him to say a word about the examination of the hock for the detection of Spavin. He pointed out the rules observed in manipulating the joint for that purpose, observing that, some twenty-one or twenty-two years ago, Edward Stanley demonstrated to them the best method, founded upon the anatomical arrangement of the bones to which he had referred. Notwithstanding that it might, perhaps, be considered "tailorified," he thought they would sometimes be quite justified during their examination in taking a mould of the hocks. There was a difference between Spavin and what was known as coarse hocks, and his rule in dealing with them was to contrast them one with the other, and take all the bones and the age of the horse into calculation. If they found all the bones in keeping, and the horse perfectly free from lameness, he thought they were justified in passing the animal sound; but, on the other hand, if they found one joint bigger than the other, even if the horse were apparently perfectly sound, they were not justified in passing him without a remark. In regard to a comparatively aged or an adult horse, the length of the guarantee he recommended in such cases might be much less than in the case of a young one. With regard to the treatment of the disease, it always came to one thing—the application of counter-irritation in some form or other. In firing he always took particular care to force the point of the iron well into the bony structure itself. Some people thought there was a likelihood of opening the joint, but it was extremely small, and practically it was annihilated, and they never need trouble about such a contingency. Tenotomy he considered perfectly useless, except for certain special cases. After speaking of the difficulty which attended the treatment of Spavin when it affected the subtarsal ligament, Professor Walley went on to describe the characteristics of Occult Spavin. Although the cause of this disease was somewhat doubtful, he attributed its origin to the peculiar motion of the joint, and the consequent material interference with the blood-supply in the region. They were aware that in regard to this form of the disease the lameness did not pass off with exercise. However they might manipulate, the animal would go perhaps more lame at the close of his journey than at the beginning. There was no enlargement of the joint, though there might be a certain amount of heat, and there must be pain on concussion, the symptoms of which might be produced by striking the bone or the bottom of the foot with a hammer. The treatment of Occult Spavin was the most difficult thing they had to deal with, firing, blistering, setoning, or plugging being alike unavailing in curing the lameness, until they brought about anchylosis, which they were unable to do in all cases. From examination and investigation, he was disposed to think that there was such a thing as gouty disease of the hock, and, naturally, heavy cart-horses employed in town work were the animals most subject to it. As a possible means of arresting the ailment, he recommended change of food, and an application of iodine to the region affected. He next proceeded to deal with Bog Spavin and Thorough-pin, pointing out that they were distinct and separate diseases, and dwelling upon the importance of satisfying themselves, before they proceeded to treat for Bog Spavin, that they had really to deal with the disease, and not with Thorough-pin. Bog Spavin was frequently seen in very young horses, sometimes almost

XUM

in foals. There were dozens of colts which were found to be so affected at twelve months old, numbers at two years, and it was of very frequent occurrence at three years. They had, therefore, hereditary tendencies to think of in their treatment. It did not necessarily produce lameness in all cases, and the animal might last for years; but as in a legal point of view he was undoubtedly unsound, and was in severe work liable to fall lame at a sooner or later period, their old friend the special warranty for a certain period, became of use to them. In the treatment of Thorough-pin, as in the other cases he had named, counter-irritation formed their great stock-in-trade, although there were several other methods of dealing with it, such as the application of pressure, the injection of iodine, or the use of the seton. In his own practice he had been more successful with the last-named method than with any other means of cure. With regard to the seton, however, they must not expect any immediate result. Frequently months would elapse before they obtained any results. In the case of capped hock, the use of the seton would in his opinion be more often found beneficial than any other mode of treatment they might adopt. In ordinary cases it was enough to open the part and deal with it as an ordinary wound. The last disease he referred to was Curb, in regard to the definition of which he differed from Mr. Wilkinson. In the great majority of cases Curb was due to nothing more nor less than a thickening of the ligament, which of all others from its position, was the least liable to strain of any kind. He pointed out the characteristics of the disease, maintaining that they were not to take as Curb every little enlargement which occurred in the same region. Cases had come under his notice in which injury from the horse striking the joint, or where there had been a little loose excrescence, which could have been removed with a stroke of the knife, had been attributed to Curb. Its treatment was not difficult, and the disease might be cured in a comparatively short space of time. As to the passing of a horse with Curb for trading purposes, he mentioned a case in which a horse shown at an agricultural show in Shropshire was refused the prize for the best stock-getter, because he had been fired, and the official veterinary surgeon would not pass him, although the owner said the injury had been due to an accident. The result proved that the veterinary surgeon was right, for afterwards twenty colts by the horse might have been found all with curby hocks. In conclusion, he directed their attention to a number of interesting specimens of diseased hock met with in the course of his practice, and on resuming his seat he was warmly applauded.

Professor PRITCHARD said he had listened with a great deal of pleasure to the lecture, and he might say he agreed with the bulk of what Professor Walley had said, although he was disposed to criticise his theory as to the cause of Bone Spavin, considering that nature would not have made a hock which was of itself predisposed to disease. The knee had to bear far more weight than the hock, and if Professor Walley's theory were right they would more often have Spavin upon the knee than the hock. He thought the explanation of the fact that they found Spavin more often upon the inner side of the hock than the outer might possibly be that the inner side was more under the centre of gravity. He admitted all that had been said with reference to the manner in which Spavin commenced, and considered that it frequently had its origin in the small ligaments which held together the small cuneiform bones. He also agreed that firing was the best of all remedies, and the one most to be relied upon. At the same time he had very little doubt that plenty of horses had been fired for Bone Spavin which had never had the disease at all. He also expressed concurrence in Professor Walley's remarks as to the pathology of Curb, which he said agreed with what he had advanced some time ago in a lecture delivered either in Manchester or Liverpool.

The discussion was continued by Messrs. Blakeway, Attwood, Stanley, Wragg, Smith, H. Stanley, and Trigger; and on the motion of Mr. TIPPER, seconded by Professor PRITCHARD, a hearty vote of thanks was accorded to Professor Walley.

On the motion of Mr. OLIVER, seconded by Mr. BLAKEWAY, a similar compliment was paid to the President for his inaugural address and conduct in the chair.

It was resolved that the next meeting of the Association should be held at Leamington, and the President announced that Mr. Stanley had consented to read a paper on "Professional Ethics."

LAWRENCE C. TIPPER, *Hon. Sec.*

SCOTTISH METROPOLITAN VETERINARY MEDICAL ASSOCIATION.

A QUARTERLY meeting of the above Association was held in the London Hotel, Edinburgh, on Wednesday, May 16th, the President, C. Phillips, Esq., A.V.D., in the chair.

Present: Professors Walley, Lewis, McFadyean; Messrs. Baird, Fairbairn, Fingzies, Storrie, Greg, Connachie of Ayton, Connachie, Junr., Selkirk, Cunningham, Young, W. O. Williams, and the Secretary.

The minutes of last meeting having been read and confirmed, the Secretary proposed that the following gentlemen be elected members of the association—C. Phillips, Esq., A.V.D., V.S. 3rd Dragoon Guards, and Mr. Clark, Veterinary Surgeon, Cupar Angus. This was seconded by Mr. Storrie, and both gentlemen were unanimously elected. Mr. W. O. Williams nominated for membership Mr. Stewart, M.R.C.V.S., of Stirling.

Following upon some consideration of the Society's rules, which are under revision, discussion on Mr. Macgillivray's paper on Tubercular Stomatitis was resumed by Professor Walley, who repeated an opinion he had already expressed, that the disease in question was not tubercular in its nature, and that it was the disease long ago described by Simmonds under the designation of Malignant Aphtha.

The history of a case of Twist of the Bowel was brought before the meeting by the Secretary in the absence of Mr. H. Thompson of Aspatria, in whose practice the case occurred.

Drawings of two monstrosities were exhibited by Prof. Walley.

A monstrous calf, sent by Mr. Scott, of Mallerstain, Kelso, which had two well-developed heads, four fore legs, two hind legs, and two tails; one fore leg had been removed in the uterus.

Examination of the internal organs showed the presence of two complete sets of thoracic organs, stomachs, and small intestines, with dual livers, kidneys, and spleens. The two sets of small intestines joined, and entered one large intestine. One set of male generative organs existed, but no external generative organs were present.

A monstrous bovine fœtus, extracted and sent to College by Mr. MacGregor, of Bedlington. The bones of the cranium were broken by Mr. MacGregor in order to extract it. The abdomen was covered with imperfectly-formed skin. The two fore legs were imperfectly formed; the two hind legs were very rudimentary. The tongue was adherent anteriorly to the front of the chin. There was no tail and no external generative organs. The head was very large; the ears small. The head, which was bullet-shaped, caused the obstruction at delivery.

Mr. W. O. Williams promised to read a paper at next meeting on Obstruction of the Bowels.

Votes of thanks were awarded Prof. Walley and Mr. Thompson for their communications, and to the President. R. RUTHERFORD, *Secretary.*

PROCEEDINGS OF THE FIRST GENERAL MEETING OF THE NATIONAL VETERINARY ASSOCIATION,

HELD AT THE SOCIETY OF ARTS' ROOMS, JOHN STREET, ADELPHI, LONDON, ON TUESDAY, 8TH MAY, 1883.

The President (G. FLEMING, Esq., F.R.C.V.S., LL.D.) occupied the chair.

The members present were:—N. Almond, J. D. Barford, W. F. Barrett, E. E. Batt, Layton J. Blenkinsop, W. H. Bloye, T. Briggs, J. Broad, Arthur Broad, T. Burrell, J. Cameron, A. R. Charles, E. T. Cheeseman, T. G. Chesterman, A. C. Cope, J. H. Cox, J. Roalfe Cox, Dr. Dudgeon, W. Duguid, W. A. Edgar, H. Edgar, J. E. Elphick, E. Faulkner, Jas. Freeman, Geo. Goodacre, G. Gray, T. Greaves, H. Hogden, J. Hopkin, W. Hunting, A. Adrian Jones, H. Kidd, J. Lambert, T. D. Lambert, A. Lawson, H. G. Lepper, J. Irvine Lupton, Professor McCall, D. McGill, J. Mackinder, J. Malcolm, J. Matthews, C. Moir, W. J. Mulvey, G. A. Oliver, H. Olver, J. G. Parr, Wm. W. Pritchard, W. Roach, Professor Robertson, M. M. Rock, P. A. Rock, J. A. Rostron, J. Rowe, A. H. Santy, Professor Shave, H. K. Shaw, C. Sheather, H. M. Singleton, S. H. Slocock, W. A. Taylor, W. H. Thomas, J. P. S. Walker, Professors Walley, Walters, and Williams, W. Wilson, W. Woods, F. W. Wragg (*Treasurer*), and J. Penberthy and Geo. A. Banham (*Hon. Secs.*).

There were also present as visitors, Lord Denman, Dr. Watson-Cheyne, Colonel Blenkinsop, and the following students of veterinary medicine:—W. Brookes, W. Brown, W. R. Bull, B. Cheekley, G. Cox, E. P. Evans, J. F. Farrington, H. Golding, F. Harvey, G. W. Haydon, T. G. Hewitt, W. Langdon, W. Pickering, J. E. Richards, H. A. Spurgin, and J. Walker.

Apologies for non-attendance were received from A. Bain, Professor Brown, W. Carless, H. J. Cartwright, C. Cunningham, J. H. Carter, Sir F. Fitzwygram, T. D. Gregory, J. P. Heath, Professor Simonds, E. Stanley, L. C. Tipper, R. C. Trigger, and P. Wallis.

The PRESIDENT opened the meeting by announcing that it was the business of the General Meeting to fix a time and place for the next General Meeting to be held, and also to elect officers for carrying out the same. He thought, however, that as there were so few members of the Council present at that early period, perhaps it would be better to defer this matter to later on in the day. Therefore he would ask the Secretary to read the notice of the General Meeting. This being read, the President then remarked that it was desirable they should be made acquainted with the origin and growth of the Association; he would therefore call upon the Secretary to read the "Report" of the Association up to the present time.

Report of National Veterinary Association for 1883, *in accordance with Rule XLIII.*

It is well known to you, Mr. President and Gentlemen, that the formation of this Association was proposed by Mr. Banham, seconded by Mr. Fleming, and carried at the British National Veterinary Congress of 1881. At the same meeting Mr. Hunting also proposed "That the Congress should become an established institution, as such meetings were conducive to the public welfare, and advantageous to the veterinary profession." In order to carry out these propositions, the Congress appointed the secretaries (Messrs. Steel and Banham) to select gentlemen and form a committee to inquire into the matter; and a list was provided for those willing to act on that committee to sign. The names on this list, however, were found to be too localised and limited for the purpose; therefore it was decided that the views of each of the existing local Veterinary Medical Societies should be obtained before

the committee was formed, and for this purpose the following letter was forwarded to the secretary of each of the societies :—

"Downing Street, Cambridge.

"Sir,—It will be seen on pp. 118 and 119 of the Proceedings of the Congress, that the constituents were unanimous in their opinion as to the advisability of the British National Veterinary College becoming an established institution, in the shape of a British National Veterinary Association. A list was provided for signatures of those gentlemen who were willing to act on a committee to consider the question.

"Before, however, the committee is formed, we think it advisable and requisite to obtain the opinions of the various existing Veterinary Medical Societies with regard to its formation.

"May I, therefore, ask you to kindly bring the subject before the members of your society at the next meeting, and find out whether they are in favour of such a scheme, and willing that their society should assist in its formation.

"A pamphlet was circulated at the Congress, and published in the Proceedings at page 113, showing the scheme which we think might be established. That scheme is not intended to be the final form of the Association, but simply an outline, to be modified according to the suggestions that may be offered. Any alterations, therefore, that your society may suggest will be gladly received, as well as the names of any gentlemen who are willing to act on the committee.

"We are anxious that it should be as representative as possible.—Yours faithfully,

"GEORGE A. BANHAM,

"*Pro.* Hon. Secs. B.N.V.C."

The answers received from them to this letter were favourable, so far as the formation of the Association was concerned, but no names were forwarded for a committee.

From this it was evident that the profession was willing to assist the object, but gave no suggestions as to how it should be brought about; therefore, in this latter respect, we were compelled to act on our own judgment. After careful consideration, it was determined that the President of the Royal College of Veterinary Surgeons, a representative from each of the schools, two representatives from the Army Veterinary Department, and two from each of the local societies should form our committee. In order to effect this, the following letter was forwarded to the societies* :—

"Downing Street, Cambridge.

"Sir,—As most of the Veterinary Medical Societies are in favour of a 'British National Veterinary Association' being formed, and are willing to assist in starting it, we think we cannot do better than ask each society to select two of its members to act on that committee. These, with two representatives from the army, one from each of the schools, and the President of the Royal College of Veterinary Surgeons, will form our 'Committee' to consider the subject, and (if they think proper) to draw up a code of rules, elect officers, and declare the Association formed.

"We would, however, strongly urge the members of each society to look over the scheme and make any alterations and additions they consider necessary. In order to do this, I have sent you copies of the scheme, so that you can send one with your agenda paper to each member. This will enable them to make their notes before they attend the meeting, and so save time.

"If the societies will undertake this, we consider the 'Committee' will be

* Unfortunately, the Scottish Central Veterinary Medical Society was omitted, but we soon endeavoured to rectify this.

a fairly representative one of the profession ; and the gentlemen the societies appoint to attend will come prepared to answer any questions, and vote upon points which may be raised for their decision.

"Kindly let me know the names and addresses of the gentlemen your society select to act on the Committee, and oblige yours very truly,

"GEO. A. BANHAM,
"*Pro* Hon. Secs. B.N.V.C."

From this note, gentlemen, you will observe that we not only asked the societies to nominate their two representatives, but also urge them to consider the subject for themselves ; so that their representatives would attend the Committee with the ideas of their respective societies as well as their own. In this way we endeavoured to obtain the services of the local societies as "*sub-committees.*"

From the answers to this letter, the Committee (appointed by request of the B.N.V.C. to inquire into the advisability of forming a National Association to provide means for professional meetings on a permanent basis) was formed as follows :—

The President of the Royal College of Veterinary Surgeons : G. Fleming.

The representatives from each of the teaching schools : Camden Town, London—J. Penberthy ; Clyde Street, Edinburgh—Professor Walley ; New Veterinary College, Edinburgh—Professor Williams; Glasgow, Edinburgh—Professor McCall.

Two representatives from the Army Veterinary Department : J. J. Collins, P.V.S.; Professor Walters, Aldershot.

Two representatives from each of the local Veterinary Medical Societies : 1. Central—Messrs. Woodger and A. Broad ; 2. Lancashire—Messrs. T. Greaves and T. Briggs ; 3. Liverpool—Messrs. W. Leather and T. W. Moon ; 4. Midland—Messrs. B. Russell and E. Stanley ; 5. Norfolk and Eastern Counties—Messrs. J. D. Overed and J. Hammond ; 6. North of England—Messrs. H. Hunter and G. Elphick ; 7. Southern Counties—Messrs J. B. Martin and J. D. Barford ; 8. Yorkshire—Messrs. Wm. Broughton and J. S. Carter ; 9. Scottish Metropolitan—Mr. R. Rutherford ; 10. West of Scotland ; 11. Scottish Central [We regret to say we omitted to communicate with this society]. 12. Irish Central—Messrs. J. D. Lambert and J. Malcolm ; 13. North of Ireland—Messrs. J. H. Simcocks and H. R. Bradshaw.

Early in October we heard there was to be a Council Meeting of the Royal College of Veterinary Surgeons, and we thought this would be a good opportunity for holding our Committee Meeting ; therefore we hastily sent the following note to each of the members of the Committee to obtain their views :—

"Downing Street, Cambridge,
"*October 12th*, 1882.

"Sir,—We hear there is a Council Meeting of the Royal College of Veterinary Surgeons on October 26th. Would it not be well for our Committee (to consider the advisability of forming a British National Veterinary Association) to meet at two o'clock at the same place on the following day? This would, we think, give the Scotch and Irish Association an opportunity of being represented.

"Kindly inform me *by return of post* whether this meets with your approval If we find it suits the *majority* of the Committee, we will send out a formal notice at once.—Yours truly,

"GEO. A. BANHAM,
"*Pro* Hon. Sec. B.N.V.C.

The answers to this communication showed a decided favour for the meet-

ing being held as we suggested; therefore the following notice was issued immediately :—

"Downing Street, Cambridge,
"*October 18th*, 1882.

"Dear Sir,—The meeting of the 'British National Veterinary Association Committee' will be held at 10, Red Lion Square, London, at two o'clock on Friday, October 27th.—Yours truly,

"G. A. BANHAM.

"*Business.*

"1. To consider whether such an Association should be formed or not.
"2. To determine its objects, and the form it should assume.
"3. To draw up a code of rules.
"4. To elect officers, etc., etc."

In accordance with this notice, the meeting was duly held on the day and at the place and time appointed, with the following results :—

Present—G. Fleming, Esq., F.R.C.V.S., in the chair; Professors Williams and Walters; Messrs. Banham (representing the Norfolk and Eastern Counties Society), Barford, Briggs, Broughton, Broad, Carter, Greaves, Lambert, Leather, D. McGill (representing Professor McCall), Simcocks, Woodger, and F. Wragg (representing the Midland Society).

Apologies for their unavoidable absence were received from Professors McCall and Walley, Messrs. Bradshaw, Elphick, Hammond, Hunter, Martin, Moore, Overed, Russell, Rutherford, and Stanley.

Mr. BANHAM made a few remarks upon the objects of the proposed Association, especially with regard to its scientific, social, and political aspects.

The members present were all convinced that the time had arrived for endeavouring to form the proposed Association.

Professor WILLIAMS proposed "That an Association be formed;" Mr. LAMBERT seconded this, and it was carried unanimously.

Mr. BROUGHTON proposed, and Professor WALTERS seconded, "That the name of the Association shall be the 'National Veterinary Association.'"

Mr. GREAVES proposed, and Mr. CARTER seconded, "That the general meetings of the Association be held in various parts of the country from time to time."

Mr. FLEMING proposed, and Mr. BRIGGS seconded, "That the objects of the Association should, for the present, be to provide means for holding meetings of the profession for discussing professional topics, and otherwise advancing veterinary science."

In order to accomplish these propositions, Mr. BANHAM suggested that the existing local Veterinary Medical Societies should specially lend their aid, and look upon the Association as a connecting-link between them, although the Association claimed no connection with their individual rights and constitutions. If two or more of these societies co-operated from time to time, the ways and means would easily be provided for holding the meetings in different parts of the kingdom, which is one of the chief features of the Association.

Some debate then took place with reference to the period which should elapse between each meeting; Mr. Broughton and others expressing a wish that the general meetings of the Association should be held annually; whilst others agreed with Mr. Fleming that the profession was too small to provide subject-matter for such frequent discussions. Finally it was decided that it would be best to leave this point open until the Association had held its first meeting, they would then be better able to judge the most fitting interval to elapse before the following meeting. At any rate, Mr. Barford considered the first meeting should not be delayed too long, and no time

should be lost before the matter was brought publicly before the profession at large.

It was, moreover, mooted that it would be very convenient to many members of the profession if the meeting were held the day after the annual meeting of the Royal College of Veterinary Surgeons. Therefore, Mr. SIMCOCKS proposed, and Mr. PENBERTHY seconded, "That the first meeting of the National Veterinary Association be held in London, the day after the annual meeting of the Royal College of Veterinary Surgeons, in May next; and that the time and place of subsequent meetings be fixed by the Council."

On the motion by Professor WILLIAMS, supported by Mr. FLEMING and the Committee generally, it was decided that "the members of the Association should be holders of the diploma of the Royal College of Veterinary Surgeons, or the veterinary certificate of the Highland and Agricultural Society of Scotland, who conform to the rules of the Association and pay the annual subscription," which Professor Williams proposed should be 10s. 6d. Mr. A. BROAD seconded this, and it was carried.

The officers of the Association then occupied the attention of the Committee, and it was settled that, for the present, they should consist of a President, President-Elect, Vice-Presidents, Treasurer, Secretary, Council, and a Provisional Committee.

The officers elected to start the Association were as follows:—

President—Mr. G. Fleming, proposed by Mr. BROUGHTON, and seconded by Mr. SIMCOCKS.

Vice-Presidents—Gen. Sir F. Fitzwygram, Bart.; Mr. William Pritchard, London; Mr. T. Greaves, Manchester; Mr. T. D. Lambert, Dublin; Mr. R. Rutherford, Edinburgh; Mr. Thos. Taylor, Manchester; proposed by Mr. SIMCOCKS, seconded by Mr. MALCOLM.

Council to consist of (*a*) The Presidents and Secretaries of the various existing Veterinary Medical Societies. (*b*) The Principals of the Veterinary Schools. (*c*) Six other members of the profession, specially selected from those parts of the kingdom where Veterinary Medical Societies do not exist (by the Provisional Committee). (*d*) *Ex officio*, the President, President-Elect, Treasurer, and the Secretary of the National Veterinary Association.

Treasurer—Mr. F. Wragg (London), proposed by Mr. FLEMING, seconded by Mr. BANHAM.

Secretaries—Messrs. Penberthy and Banham, proposed by Mr. SIMCOCKS, and seconded by Mr. LEATHER.

In conclusion the Committee recommended that, as the first meeting was proposed to be held in London next May, the actual working, organising—or as we shall term it, the "*Provisional Committee*"—be elected from the members of the Central and Southern Counties Veterinary Medical Societies, and others living in or near the metropolis. The selection to be intrusted to the President, Treasurer, and Secretaries.

A vote of thanks to the President of the R.C.V.S. for occupying the chair terminated the proceedings.

In accordance with the concluding remarks of the Committee Meeting, the President, Treasurer, and Secretary (Mr. Penberthy) nominated the following gentlemen to act on the "Provisional Committee," all of whom kindly accepted the office, and to whose energy the present meeting is due:—Professors Axe, Pritchard, and Walters; Messrs. E. E. Batt, A. Broad, J. D. Barford, A. Charles, J. H. Cox, J. R. Cox, W. A. Edgar, F. Farrance, G. Fleming, J. Gibbs, W. J. Hancock, W. Hunting, J. B. Martin, D. McGill, W. Reekie, J. Rowe, C. Sheather, H. K. Shaw, H. C. Simpson, W. A. Stock, J. Woodger, F. Wragg, G. A. Banham, and J. Penberthy.

Mr. PENBERTHY then said that the results of the deliberations of the Provisional Committee had been brought under their notice in printed matter,

and he would not take up the valuable time of the meeting by entering into details. In completing the Council they had endeavoured to obtain the services of members residing in the west of England, where no Veterinary Medical Society at present existed. The Committee had worked thoroughly well together, and the utmost interest and goodwill had been shown throughout.

For the reader's benefit, we insert a few of the details with regard to the Provisional Committee's work.

They decided that the time allotted for the General Meeting should be one day.

That two major subjects should be brought forward for discussion—one to occupy the attention of the meeting in the forenoon, the other the afternoon. The first major subject to deal with a subject of Comparative Pathology, and that Mr. Cox be invited to write the paper, and Mr. Fleming to open the discussion.

That Professor Walley be invited to write a paper for the second major subject, and Professor Robertson be asked to open the discussion.

The Provisional Committee put themselves in communication with these gentlemen, and they all complied with their wish, Mr. Cox choosing "Tuberculosis" for his subject, and Prof. Walley "The Contagious Diseases (Animals) Act."

They completed the Council by adding the following six names:—The Professional Adviser to the Privy Council; the Principal Veterinary Surgeon, A.V.D.; Messrs. J. V. Heath, J. D. Gregory, T. D. Broad, and H. T. Thomas.

These gentlemen, and those elected to the various offices by the "Committee of Inquiry," were informed of their election. Mr. T. Taylor, however, wished to be excused from acting as a vice-president on account of ill-health.

The next important point which occupied the attention of the Committee, was how to make the profession acquainted with the formation of the Association. This, they concluded, should be accomplished by sending a circular to each member of the profession.

Therefore the following was forwarded to each M.R.C.V.S. and holder of the Highland and Agricultural Societies' veterinary certificate:—

"Dear Sir,—At the British National Veterinary Congress of 1881 it was unanimously resolved that a committee should be appointed to investigate and inquire into the advisability of establishing an Association similar to the Congress, for the purpose of discussing matters of professional interest, and to provide the necessary arrangements for holding future meetings of the veterinary profession.

"In accordance with this resolution a Committee, composed of two representatives from each of the existing Veterinary Medical Societies, and the Army Veterinary Department, one from each of the teaching schools, and the President of the Royal College of Veterinary Surgeons, was formed.

"This Committee met at 10, Red Lion Square, on Friday, October 29th, at 2 p.m.

"G. Fleming, Esq., was voted to the chair.

"1. It was decided that an association should be formed, to be styled the 'National Veterinary Association.'

"2. That its objects should be limited for the present to providing means for General Meetings of the members of the Association in various parts of the kingdom, for the purpose above stated.

"3. That its members should consist of holders of the diploma of the R.C.V.S., or the veterinary certificate of the Highland Agricultural Society,

who conform to the rules of the Association, and pay an annual subscription of 10s. 6d.

"4. That the management of the affairs of the Association should be vested in the President, President-Elect, Vice-Presidents, Treasurer, Council, and Secretaries, and a Local Provisional Committee.

"5. That the First General Meeting of the Association should be held in London on the day following the next annual meeting of the Royal College of Veterinary Surgeons, in May, 1883. Subsequent meetings to be held in various parts of the kingdom from time to time, as may be deemed expedient, under the direction of a Provincial Committee, elected from among the members of the Association residing in the immediate neighbourhood of the place appointed.

"6. That a Provisional Committee be elected from the members of the Central and Southern Counties Veterinary Societies, and other members of the profession, living in or near London, to make arrangements for, and regulate the business of the General Meeting in May next.

"This Provisional Committee has been formed of the following gentlemen :—Prof. Axe, R.V.C. ; Mr. E. E. Batt ; Mr. Alfred Broad ; Mr. J. D. Barford ; Mr. A. Charles ; Mr. J. H. Cox, A.V.D. ; Mr. J. Roalfe Cox ; Mr. W. Alston Edgar ; Mr. Franklin Farrance ; Mr. Geo. Fleming ; Mr. J. Gibbs ; Mr. W. J. Hancock ; Mr. W. Hunting ; Mr. J. B. Martin ; Mr. W. McGill ; Prof. Pritchard ; Mr. W. Reekie ; Mr. J. Rowe ; Mr. C. Sheather; Mr. H. K. Shaw ; Mr. H. C. Simpson ; Mr. W. A. South ; Prof. Walters, A.V.D. ; Mr. Jos. Woodger ; Mr. F. W. Wragg ; Mr. G. A. Banham ; Mr. J. Penberthy.

"To ensure the success of the Association in a profession so numerically small as ours, it is most essential that all should contribute their assistance in some form or another. Therefore your co-operation in the work is earnestly requested ; and we shall be glad if you will submit your name and forward your subscription to any of the Hon. Secs. of the existing Veterinary Medical Societies ; or to either of the Hon. Secs. of the National Veterinary Association.

"We confidently believe that the formation of the Association is in accordance with the wishes of the profession at large, and that its members are quite alive to the professional, scientific, social, and political advantages to be derived from such an institution. We therefore venture to solicit your active support. An early reply will be esteemed a favour.—We are, dear sir, yours truly,

"GEO. A. BANHAM, *Downing Street, Cambridge.*
"JOHN PENBERTHY, *Royal Veterinary College, London, N.W.*"

This circular was accompanied by a note to the secretaries of the various Veterinary Medical Societies, asking them to act as "whips" and collect subscriptions, etc., which they have done with great zeal, and to the advantage of the Association.

Through the instrumentality of our President, they were enabled to secure the use of the Society of Arts' Room for our General Meeting.

They have also drawn up a code of rules for the approval and adoption of the Council and General Meeting.

We hope these few details will be sufficient to show that the P.C. have not only done the ordinary routine work of arranging for the General Meeting, but also endeavoured to provide a guide for future ones.

The President's Address.

You have heard the report read, giving the history of the formation of the Association. I have only now to ask you to assist me in establishing

it on a firm basis, and I am sure that request will meet with a ready response. The formation of such an Association as this has been almost forced upon us. The zeal and enthusiasm which the profession has within the last few years manifested, has resulted in establishing societies which have for their object the gathering and dissemination of knowledge and the interchange of ideas. These societies have been increasing in number, and their effect upon the profession has been most marked. It was, however, plain that the action of these societies, whilst beneficial to themselves, had only an indirect influence with regard to the spread of veterinary knowledge upon the profession at large, and certainly not much upon the public. The medical profession many years ago recognized the necessity for such an institution as that which the veterinary profession are now starting, and the advantages which that profession has derived from the *British Medical Association* can scarcely be too highly estimated, and it has by this means risen to a position which it could not have hoped to reach by its medical schools, or any other means; and human medicine has obtained a place in this kingdom which is as high as the benefits accruing therefrom to the community deserve. It may be late in the day for us to start a similar institution, still it is not too late to mend. Our profession is very young: it is only about ninety years since the first veterinary school was established in London; and I think, bearing in mind the difficulties which have had to be overcome, and the intense apathy of the British public to the claims of veterinary science, that wonders have been accomplished. But much has yet to be done: we are but on the threshold of our work. I am, however, sure, gentlemen, from what I see of the profession and from what I know of its members, that if it only gets a fair chance it will accomplish its work thoroughly and well. I think that this Association is bound to effect a large amount of good, not only to the profession, but to the public. As regards the former, it will be the means of concentrating the efforts of the Veterinary Medical Societies of uniting and binding them into one whole; and with respect to the public health and wealth, it should be still more beneficial. I have alluded to the unfortunate apathy of the British public to the claims of veterinary science; but if anything will remove that apathy, it will surely be an association based upon such a foundation as ours, and with such objects. The largest empire, perhaps, the world has ever seen, an empire which embraces a very large proportion of the human race, which is mainly agricultural, and which claims to produce the best breeds of horses, cattle, sheep, and pigs, can scarcely look on without concern at a movement which has for its object and aim the protecting of these animals from disease. This Association represents the best workers and the most scientific portion of our profession, and its claims to be heard and listened to should be very great indeed. I think that the want of interest which the public exhibits is due to the fact that the utility of veterinary science has never been properly brought before it, rather than to any lack of desire to assist us. Perhaps a large amount of the blame is due to ourselves. We have, to a certain extent, been doing our best, but it has been done in an isolated and disjointed manner. But knowing, as we do, what the public is when its attention is fully aroused, we may be sure that it will recognise the efforts of this Association to promote veterinary science. I do not know that I have much more to address you upon. I am proud of the honour you have done me in asking me to be your first president. I wish you had bestowed that honour upon some one more competent, but you could not have selected any one more anxious that the Association shall be a success. I have long felt that if the profession is to rise, it must be by its own efforts. Acts of Parliament may assist us, but in whatever position we are placed, it rests with ourselves to maintain it. You have shown that you are willing and ready to occupy the position which you should assume. The constitution of the Association has been explained to you.

Its meetings will be held in different places. Those which are most suitable will be selected. The president will be local, as far as possible, as well as the working-staff. I think the Association will thus effect more good than if it were permanently fixed anywhere, even in London. Our great centres of business and agriculture are dispersed all over the country, and in visiting these not only will the convenience of members be studied, but local influences and local interests will be brought to bear upon us. I do not approve of centralisation, and I think that the perambulations of your Association will be productive of the greatest good. I thank you, gentlemen, for listening to me. The time is short for an address, but I think I have said enough to show that the objects of the Association are well worthy of drawing forth your earnest efforts. I trust that in all your work you will be actuated by a kindly feeling towards each other, and by an earnest desire for the advancement of the profession and the public weal.

MAJOR SUBJECT I.

HUMAN AND BOVINE TUBERCULOSIS—ITS COMMUNICABILITY.

BY J. H. COX, M.R.C.V.S., ARMY VETERINARY DEPARTMENT.

Considering the prominent position the question of *Tuberculosis* has now assumed—not only in the medico-veterinary world, but amongst all strata of society—it behoves us, as veterinarians, to take a leading part in the promulgation of facts and ideas which will tend to the elucidation of some of the points at present forming the subject for discussion. Many bovine diseases, which now possess an individuality by having their *fons et origo* clearly defined, had a supposed existence in days of yore as by-complications of other forms of disease; and tubercle would appear to constitute no exception to this rule.

In order that our subject may be briefly discussed in all its bearings, it is expedient that we should divide it into the following sections, and in so doing a synoptical summary only of the leading points will be formulated. Modern research having solved many of the abstruse problems connected with disease, it is hoped that the question as to the true nature of Tuberculosis may ere long be finally settled, and so be added to the long list of successful achievements which signalise the advancement of the present era. We do not arrogate to ourselves any superior knowledge of the subject at issue, but by placing it before the members of this Association in as lucid a manner as is compatible with our views, we trust that out of many minds good may accrue, and facts unearthed which will tend materially to assist those who are making this particular branch their study.

The following points suggest themselves:—(1) Tuberculosis as observed in the human subject. (2) Bovine Tuberculosis. (3) Its communicability to the human subject. (4) Means best calculated to prevent this contingency.

Tuberculosis in the human subject may be viewed as a disease *sui generis*. For propagation it possesses genetic elements which act in a specific and definite manner. The term *tubercle* embraces in its literal sense an area of considerable latitude; but whether or not we have arrived at a limit by which we can encompass its surroundings, is not quite clearly proved. Tubercle, unless we recognise it in a specific sense, has a widespread signification, and would gather to itself various combinations of disease which in no way have direct reference to the true character of Tuberculosis. In the earlier days of medical history, it was classed in the nomenclature of diseases by a title which had its origin from the results which the

XUM

disease generated, and not from any specificity which might be attached to it. Tubercle, or in other words, "a small swelling," may be derived from a variety of causes; but Tuberculosis, as now understood, possesses distinctive features.

The new and somewhat startling evidences as to the causes in operation for production are exemplifications of the rapid march of modern research. But there is just a chance that the excessive zeal thus engendered may lead to erroneous results. Enthusiasts in matters of bacilli production are apt to allow their common-sense to become subordinate to their zeal. *Ergo*, it is incumbent on those interested to give their earnest attention to these matters, and so modify the views of those whose imaginations are prone to lead them astray.

As far as observation and experimentation have at present carried us, we are justified in the assumption that true Tuberculosis is the result of more than ordinary cell formation with its reproductive tendency. If it be true, and there seems to be doubt of it, that it is due to a micro-organism, having in its constitution special features peculiar to its class, and just as potent as the bacillus of putrefaction or that of Anthracis, we are confronted with an element of danger which our forefathers could not have dreamed of, or even have appreciated had they known of its existence. With the advent of Pasteur, Koch, and other scientists, the world has been convulsed with the results of their endeavours; and we are now becoming awakened to combinations which tend to render any prior teachings on these subjects as obsolete. *Versus* the opinion of the above *savants*, we have an array of talent who would have us believe that the picture is overdrawn, and that we are needlessly forecasting dangers which exists only in the highly-taut and imaginative brains of their co-workers, but nevertheless opponents, insomuch as it applies to the etiology of the disease. Without attempting to draw any line of demarcation between the two classes of aspirants to fame, we have data sufficiently conclusive to stimulate us to increased exertion for the prosecution of this particular branch thus opened out to us.

For many years past Tuberculosis has been supposed to possess some benign influence in its genetic properties. Having the experiences of others on which certain fundamental principles could be based, it was left to Koch to inaugurate a new era in tubercular history; and we have now presented to our notice, in all its nakedness, the *Bacillus of Tuberculosis*. The scepticism which enters so largely into the minds of some leads them to doubt the correctness of this theory. They account for the bacilli thus generated as being merely one of the forms which this germ arrogates to itself under certain conditions. But when we consider that its propagation and subsequent development can be occasioned—*i.e.*, cultivated—in media opposed to the one for the successful reproduction of ordinary bacilli, our thoughts naturally turn to Koch's theory as being correct in principle, and only requiring further elaboration to finally establish its correctness.

A brief outline of the structure of tubercle is here admissible. It originates as foci, being microscopical in dimensions. Each one possesses similar features in construction, and is mainly a central giant corpuscle surrounded by a zone of smaller ones, having the appearance of lymphoid cells. These are embedded in the reticulum of the tubercle, and form its principal bulk. Being somewhat similar to leucocytes in shape and development, they have been mistaken for them. Later discoveries, however, teach us that these nodules consist of tubercle-bacilli, appearing as delicate rods, from a quarter to half the diameter of a blood-corpuscle in length, developing and spreading rapidly in the initiatory stage of the disease, and becoming more abundant later on at the borders of the cheesy mass. The giant cell, or central point, appears to have a special affinity for the primary bacillus,

and in reality to constitute its nidus, especially so in Bovine Tuberculosis. Hence we find the parent cell, if it may be so termed, to be the focus from which others take their origin.

This multiplication goes on in its interior until we have an abundant crop. The periphery cells, or those forming the zone, likewise increase in size and number and become agglomerated: it is then we have ocular demonstration of their existence. The inherent or basement membrane is trabeculated, giving support and cover to these enlargements, which may, from collateral pressure, lose their nodular appearance and become somewhat flattened. The central point, however, generally adheres to its original form. Two kinds of tubercle are presented to our notice—the *cheesy and fibrous*. They are again divided into *generalised and local*. It is somewhat difficult to account for the different dispositions to molecular change each class assumes to itself. The cheesy metamorphosis is understood to commence in the central point, and by gradations to implicate the whole mass. It is interesting to notice that during the progress of this change the micro-organisms either leave their nidus or undergo disintegration, for they are always found in more abundance at the edges Can it be that these bacilli, which *in initio* are supposed to be motionless, have been slowly called into activity, thus tending to the destruction of their enveloping membrane or reticulum? True it is, that the whole mass undergoes degeneration: commencing in the first place by the deposition of an oily material. Two or more tubercles may be so approximated that they coalesce and form, by the rupture of the intervening septa, one cavity, and thus give evidence of vomicæ. This tendency to caseous metamorphosis is more noticeable in generalised tubercle, and is by far the most common in the human subject. The *fibrous metamorphosis* occurs with less frequency in the human subject. In the bovine, on the contrary, it forms a special feature; and the attempt to establish a morphological identity between the two—*i.e.*, human and bovine—is now engaging serious attention. In the fibrous change we likewise get softening at the central point; but the outer circumference, or fibroma, becoming infiltrated, and by degrees indurated, assumes a calcareous form, and so encapsulates the central portion, that escape is impossible. Owing to this molecular detritus of oily material becoming absorbed, the whole body of the tubercle puts on a calcified character, and on a section being made, gives one the idea of a dense and gritty mass. This is especially typical of bovine tubercle (fibrous). These deposits are found in all parts of the body; but principally in the lungs or their envelopments, liver, serous membranes, etc.

Tuberculosis and Phthisis would appear to be isomorphous, or, if there is a difference, to be one only of degree. Many series of experiments have been conducted in order to establish their identity. For this purpose inoculation with disease tissue, both human and animal, has been had recourse to; the victims chosen for experimentation being guinea-pigs, rabbits, cats, goats, etc. Koch, after devising a suitable pabulum in which bacilli could be successfully cultivated, succeeded, after several generations of bacilli had been reproduced, in inducing a similar disease in the animals thus operated upon. He claims that by this cultivation the infective material is rendered so pure and distinctive that it is freed from any pyæmic or other tendency. In almost every instance disease was produced which simulated Tuberculosis, thus setting at rest its communicability by inoculative interference.

The sputum of phthisical patients was also selected for experimentation. This was collected and dried for several weeks, at the expiration of which time it was suspended in solution and injected in the ordinary way, the same classes of animals being chosen for the operation; the sequel being that a disease similar in every respect to the one induced by tuberculous matter was generated. Other evidence is not wanting as to the power tuberculous matter

XUM

and sputa, either in a fresh state or when atomised, have in reproducing a disease identical in character. It is argued by Koch that the inherent properties of the tubercle-bacillus single it out as being totally dissimilar to those of other micro-organisms, insomuch as it is *stained only* by certain re-agents; and furthermore, that it is reproduced only at a certain temperature. On the other hand, there are observers who controvert not only this theory, but that we have to deal with bacilli in any form. We cannot here give a detailed account of the views expressed by Koch's opponents; suffice it to say they are fairly dealt with by that scientist, and in a manner satisfactory to himself and, doubtless, his followers.

Bovine Tuberculosis.—Although the nature of this disease is well known to veterinarians, allusions to certain points are absolutely necessary in order to give our subject connectedness. Fleming, in his admirable essay on Tuberculosis, has furnished us with statistics as to its history and morbidity. The data submitted by him prove to every one's satisfaction that the disease has, in its geographical disposition, scarcely any limit. So universal is its existence, that few countries may be said to be exempt from its ravages. He traced in his usual masterly style its etiologic features, also the structure of tubercle as symbolic of the disease, commencing with the initiatory cell formation, and ending in caseous degeneration. Other writers of notoriety, as Walley and Williams, have also placed the subject before us in a lucid manner; so that, in reality, there is very little to be added to our knowledge of this malady.

Speaking generally, there is perhaps no disease which is more prevalent. All classes of stock are susceptible to attack. There are, however, certain families which evince a greater liability than others; and we have also other predisponents, which are forcibly present in some instances, and absent in others. The forced system of raising our stock has been considered by some to be a fruitful source of the disease. *In-and-in* breeding, it is stated, induces a diathetic tendency. These doubtless contribute very largely to its advancement when once established; but we must look somewhat ahead for the true factors in production. If it were not so, we should be able to reduce it to narrower limits than at present. That family taint, like its counterpart in the human subject, plays an important part no one can deny. For the support of this theory we have only to draw upon bygone recollections. In-and-in breeding, which may be classed with the foregoing, also exercises an influence which is beyond dispute; but predisposition is not actually disease. The soil for propagation may have been suitably prepared for the development of germs, and there they may subsequently find vigorous growth. Given a system predisposed to disease, it requires but the slightest modicum of infective matter to develop it in all its ramifications. Such is the case in Tuberculosis.

Tubercle may be divided into *infective and non-infective.* The former, or true Tuberculosis, is the form which concerns us most. No part of the animal economy is exempt from its localisation. As a rule it is found in the lungs, glandular structure, and serous membranes. It has accorded to it various appellations, as: Perlsucht ("Pearl Disease"); Murlinsigheit ("Duckweed"); Pommeliere ("Potato Disease"); "Angle-berries," "Grapes,"—one and all apply to the same disease, the difference being the various stages of growth and appearances of the tuberculous deposit. The division into *caseous and fibrous* resembles analogically that of the human subject, each of which may have a separate existence; the latter generally confines itself to serous membranes, more especially the pleuræ. Writing on its development, Walley states: "The early stages in the process are diffuse and intense capillary congestion, followed rapidly by the formation of innumerable villous-like vascular processes, very minute, and giving the

membrane an appearance closely resembling the pile on red velvet. In the course of time the extreme vascularity of these little processes passes off; they assume a definite shape, and become converted into small hard globular nodules of the colour of connective tissue. Gradually, however, they become grey, and somewhat translucent on section, and constitute the so-called grey or fibrous tubercle. These grey miliary nodules may remain discrete, and scattered over the surface of the membrane like millet-seeds; or they may become connected together by delicate bands of new connective fibrous tissues. When tuberculisation is very rapid, distinct polypoid processes may be formed on the membranes. These bodies are often at the outset very vascular—in fact, hæmorrhagic." These growths, when presenting a pedunculated appearance, form one of the chief characteristics of the Bovine Tuberculosis, and it is the want of additional proof of a morphological identity which creates the distinctive features of the human and bovine phases. Dr. Creighton has, in giving several illustrative cases, advanced somewhat in this direction, and sought to prove that the identity is established; but more evidence is necessary before we can assure ourselves that it is correct. These nodular bodies sometimes assume large dimensions, and occupy a large space in the thorax, and form adherences between the Pleuræ Costalis and Pulmonalis. In some cases they are attached at both extremities; in others their apices are free. When found in other parts of the body they behave somewhat differently, according to the organs which they implicate.

Co-existent with the fibrous we may have the caseous metamorphosis. We find this molecular change in the inter-connective issue, especially in the lungs. The central point, as in human tubercle, softens, giving birth to an oily detritus material, which gradually spreads. The enveloping membrane becomes thickened, and so keeps in bounds the contents of the sac, or cavity; or it may, owing to an ulcerative process, become ruptured, and thus convert several sacs, should they be approximated, into a large one. The sacs may further discharge their contents into the smaller bronchi, which in turn become dilated. Writing on this subject, Walley states: "If the cyst wall becomes the seat of ulceration (a comparatively common occurrence), a communication is formed with the nearest bronchial tube, and the contents evacuated into it. In these cases the boundary wall is frequently very hyperæmic, with numerous small yellow nodules adhering to its internal surface, and with evidence of recent hæmorrhage." Fleming states "that the tubercular matter in the lungs appears to be deposited in the cortical or peripheral portion, and always in the sub-pleural and interlobular connective tissue." Intrinsically, tubercles appear to be destitute of afferent and efferent vessels, deriving their support from the vascular network of the peripheral portion. This alone, as compared with other tumours, would mark them out as a special class. If we take for granted that these nodules, however small, are the nidi for tubercle-bacilli, the apparent want of vascular distribution can be understood. The vomicæ occasioned by the softening and subsequent coalescing of two or more tubercles have also their special features. Although in a sense defined, they are irregular, which is partly owing to collateral pressure, and partly to the bases of the septa forming the partitions. The complete destruction of these septa is not always fulfilled; we therefore find them as fibrous bands or elevations studded over with the more solid particles inherent in the sac. In recent vomicæ—that is, where the septa dividing the tubercles have only just lost their continuity—specks of blood, as punctæ, and in some instances free blood, may be observed, imparting a sanguineous tinge to the contents of the sac. Although there are no vessels in the interior of the tubercle when fully developed, the peripheral circulation is somewhat hyperæmic. The character thus assigned to it serves the pur-

pose of thickening the outer circumference of the tubercle; and dependent upon the degree to which this is carried out is the character of the tubercle itself, and the resistance it afforded to the disintegrative influences brought to bear for its destruction.

Glandular tubercles, in and connected with the intestinal tract, may go on for an indefinite period without our being able to take cognisance of them. When externally situated, or at the mesenteric attachment, they form the grape-like appearance so pathognomic of their character. Some appear to doubt the implication of the gland itself, and consider that the tubercle is separate and distinct, leaving the gland intact, as it were. But as glandular structure generally seems to be specially adapted for the reception of tubercular virus, we may dismiss this as mere conception. Tubercles sometimes make their appearance within the cylinder of the gut, and slowly extending themselves along the upper portion, render, by infiltration and deposit, the coats very much thickened. We call to mind one case where inter-intestinal tubercle became so developed that the calibre of the gut, although increased in dimensions, was more than half obliterated. This was associated with Chronic Diarrhœa and Tuberculosis of Lungs. The diarrhœa, which is often a concomitant of the later stages of Pulmonary Tuberculosis, is not always the result of defective nutrition occasioned by low vitality, but is the sequel of inter-intestinal glandular tubercle, and occasionally requires the aid of the microscope to detect it. Bovine pathologists are familiar with the fact that on the commencement of this diarrhœa a slight abatement in pneumonic symptoms is apparent; and should the diarrhœa be checked, which is not always the case, the gravity of pulmonary symptoms reappears. There is no doubt, in our opinion, as to the connection which exists between the two histological features; for is it not true that "wasting" does occur, and is associated with diarrhœa as a primary symptom, to be followed secondarily by disease of the lungs? At any rate, this is our experience after some ten years' close observation of Tuberculosis, and in a district peculiarly favourable to it.

If the morphological features of human and bovine tubercle are not mainly identical, they approach that similarity which is characterised by a distinction without a difference. If by experimentation on the lower animals, as guinea-pigs, rabbits, cats, etc., we produce by the virus of the latter results scarcely distinguishable from those induced by that of the former, the identity would seem to be established. The bacillus of bovine tubercle exists, doubtless, as a separate form, but when introduced into healthy systems other than bovine, it may undergo some modification. In cattle Tuberculosis would appear to find its home, just as much as Glanders does in the horse, or Syphilis in man.

In discussing this question we must not forget the insidious nature of bovine tubercle. We are not prepared to admit its contagiousness by atmospherical media, but there are cogent points to settle in relation to it which may hereafter change the vein of thought. If the finality of the experiments now being carried on prove conclusively that we have to deal with bovine tubercle-bacillus, and that its transmissibility can be effected under certain conditions, we shall have to put bigotry on one side and embrace the new theory as the one which affords the true solution of the difficulty. The fact that only a certain percentage of animals becomes diseased is no argument that it does not possess the specific character of contagion, for we know that all maladies of this nature vary in their virulence; and further, that each class, at certain periods, affords illustrations of its becoming weakness in the ability to produce the same disease *de novo*. The virus—if not bacilli—has doubtless its stage of incubation, the duration of which is unknown to us, except by inoculation; similating that of Glanders,

Rabies, etc., it may require a prolonged existence in the system before it shows itself. Owing to the various degrees of receptivity inherent in different animals, this may be weeks, months, or even longer. We have it on record that the bacillus of tubercle is at first motionless—that is in its application to the human subject. Are we to understand that, having found its *locus, habitat,* it remains in a quiescent state until the surroundings become favourable to its movement and development and, I presume, reproduction? If so, how long does this dormant stage last? On this pivot revolves one of the problems we are called upon to unravel.

On account of the affinity tubercle has for glandular structure, it is easy to understand that the greater the volume in any particular gland, the sooner the maximum results of tubercle are attained; but such is the erratic nature of its disposition that its vagaries have no prescribed limit; hence we find it in the meninges of the brain, ossific structure, kidneys, ovaries, etc. A case occurred in our practice where the *dura mater* was the subject of tuberculisation; no diagnostic symptoms were presented, the animal fed well, and apparently was in good health until attacked by paralysis. *Post-mortem* examination revealed the existence of tubercle in the situation described, with a disposition to the disease, if not actually present, on the pleura costalis, and along the course of the intestines. Two cases have also come under our notice where *Nymphomania* was engendered by tubercular deposit in the ovaries. This desire for sexual intercourse came on at intervals of ten days, even when impregnation was effected. Enlarged parotid glands, especially in swine, have also formed the seat of ingestion for tubercle. *Mr. Macgillivray, of Banff,* has, in his admirable paper on "Tubercular Stomatitis," given evidence of the connection the above disease has to true tubercle. His experiences are based on extensive observations as to the effect tubercular virus has on the mucous membranes, and the deductive reasonings he enforces are inferential as to its being merely a form of Tuberculosis. We can in a great measure corroborate this testimony. Other writers have also elaborated upon the various forms Tuberculosis may assume; but time and space will not admit of details.

The scrofulitic tendency exhibited in some families of cattle has for some time been supposed to consist of a form of Tuberculosis, and certainly the new light thrown upon this disease would seem to bring it within measurable distance. *Dr. Yeo* states: "Certain forms of Disease, termed 'Scrofulous,' are essentially tuberculous; and their characteristic anatomical morbid products contain the infective organism peculiar to tubercle." We further find it quoted in Quain's "Dictionary of Medicine," that "to *Schüppel* belongs the merit of having proved that a scrofulous gland is indeed a tuberculous gland. In the earlier stage of the lesion, the gland is studded with microscopic tubercles, possessing characters in the article or tubercle, and the subsequent changes, cheesy and other, which the gland undergoes are due to changes in tubercles." If the identity of the two diseases is so forcible in the human subject, we may reasonably expect that in the lower animals the line of demarcation becomes very attenuated. We have for some time held the opinion that scirrhous growths, so frequently met with in cattle, had a connection with tubercle; the difficulty has been to prove it. The strumous diathesis which seems to be so inherent in some animals, and occasionally seen at the time of birth, is indicative of the dyscrasiac character of the blood; but how is it brought about? When *en evidence* at the period of parturition, it cannot have been generated by circumstances from without, but must have arisen when in embryo. If due to bacilli, analogous in shape and form to those of Tuberculosis, they must have been inherited from the dam. At present this is mere conjecture.

Its Communicability to the Human Subject.—If the characters of human

and bovine tubercle are so allied, what applies to the one would naturally have reference to the other. *En passant*, we may remark that the contagiousness of Phthisis has long supposed to have existed. In the minds of some experts it is a settled point that such is the case. They assure us that the sputa swarms with foci, from which the disease takes its origin. This theory of contagion has for some time been held in the south of Europe, and special provisions have been instituted to prevent its spread. *Galen* was forcibly inclined to this view, and so was *Morgagni*. Budd also would brook no denial as to its contagious character. On the other hand, it is fair to admit that there are some, or indeed many, who strongly oppose the dicta of their professional brethren, and ascribe its inception to some peculiar diathesis inherent in those on whom the disease operates.

In discussing the transmissibility of bovine tubercle to the human subject, we are naturally placed at a disadvantage in not being able to resort to that experimental inquiry which furnishes such startling evidences when applied to the lower animals. We can, therefore, only substitute hypothetical reasonings for absolute facts. The absence of demonstrative proof that such does actually accrue has led many to doubt the possibility of this transmission. They argue that it is speculative; and however near the goal these hypothetical reasons approach, more tangible evidence is necessary before communicability can be placed beyond the sphere of doubt. If we take for granted that the pathological and histological characters of the two diseases are allied, are we to doubt the infective nature of the one, or the reproductive tendency of the other, because the results in the two classes do not evince perfect accord? Had the views which have now taken hold of the scientific world in this particular been promulgated a century ago, and autoptical summaries been recorded with a view to fathom the relationship of the two diseases so kindred in their nature, we should have been placed in a somewhat different position. It is only of late years that comparative pathologists have entered the arena of observation; and the results, we opine, will benefit alike the higher organisation—man, and those subject to his control—the lower animals.

The transmissibility to the human subject of Bovine Tuberculosis being a subject fraught with many difficulties, it is not expected that we can more than place before the members of this Association the different conditions by which this may be effected. We may dismiss its contagious properties inasmuch as they apply to atmospherical media, although this may have an influence on propagation: it is at present a too far-fetched theory to withstand beating out. Not so with the flesh and milk of animals so contaminated. In a sanitary point of view both these questions require the deepest consideration. It will be remembered that there are other diseases affecting the lower animals, which render the flesh, when consumed, inimical to the well-being of the populace; but it is only in a certain stage. Tuberculosis would enter this category. Having discovered that an animal is suffering from this disease in its initiatory stage, and the flesh would warrant the said animal being slaughtered for food purposes, no deleterious results would accrue from its consumption, providing it was properly cooked. Tuberculosis, primarily, does not so much implicate the muscular structure, although experiments have proved that it is a contingency not very remote; and if such is the case, the heat generated during cooking would effectually destroy all chances of reproduction. It is as a secondary condition that the flesh loses its normal character and becomes unwholesome. The emaciation which ensues when the disease has been in existence for any period, is too well known to need any description. From tissue change alone, independent of any contamination which might arise from tubercle, the meat should be condemned. There is, perhaps, no fixed rule on which we can base our deliberations as to the extent

the disease may progress before the flesh assumes a morbid character. Collateral evidences must in every case guide us. It may so happen that Tuberculosis having taken on an acute form, the whole system is rendered liable to its influence, and hence molecular change brought about, and this without the indications so pathognomic of the chronic form. On the other hand, its insidious nature is often such that the deposition of tubercle takes place in various parts of the body without apparently any interference with the health of the animal, and the flesh cannot be distinguished from those not similarly affected. Speaking generally, it may be laid down for guidance that wherever tubercle is discovered interfering with the functions of any of the principal organs of the body, and is allowed to run a lengthened course, such interference must lower the vitality of the system and reduce the tone of the flesh. Dependent upon the extent of the disease follows that of the muscular tissue. Tubercle, it must not be forgotten, is cumulative: once having entered the system there is no escape for it; on the contrary, it adds to its own strength by throwing out fresh material, every point of which is capable of reproduction. The duties of deciding the fitness, or otherwise, of meat as a food commodity, should be conducted by those who are conversant with the histological features of disease, and not, as is often the case, to men who are entirely ignorant of its commonest details.

With the consideration of the milk supply, we perhaps reduce transmissibility to its narrowest limits. Considering how universal is its adoption as an article of diet, it is an essentiality that its purity should be placed beyond all doubt. The question then arises, Has the milk of tubercular cows the power of generating a kindred disease in the human subject? The answer is decidedly in the affirmative. The cases which have come under our own immediate observation tend somewhat to corroborate this statement. It was the custom in our practice to have suspicious cases of Pleuro-pneumonia brought to the hospital for the dual purpose of segregation and treatment—the Contagious Diseases (Animals) Act at that time not being in operation, this could be carried out with impunity. In several instances these turned out to be Tuberculosis; and as the milk was not considered to possess any deleterious properties, it formed part of the food commodity for the household. In two cases the results of partaking of this tubercular milk were signalised by nausea, vomiting, and diarrhœa. Several of the family suffered severely, and for a time the cause appeared obscure, until at length the suspicion fell upon the milk. In discontinuing its use, an abatement of the symptoms took place. Those in veterinary charge of the cases entertained no doubt whatever, that the lacteal secretion was the cause of the mischief. An interesting point in the case was that the morbid products, whatever they were, seem to be concentrated in the cream. With our present knowledge, the results given above possess a certain amount of significance. We are aware that calves fed directly from tubercular parents suffer in a similar degree. This has been accounted for as being due to the "poorness of the milk," and not from any particular *materies morbi* which it contains. This brings us again to the inter-intestinal glandular structure. Do we not, then, incur danger on this head alone by the imbibition of such milk; and are not the glands of the small intestines the first to register the attack? We have it on record that these glands in Typhoid Fever possess every indication and are actually subjected to the formation of tubercle. Dr. Creighton, in quoting from Professor Hoffman's researches on the great Basel epidemic of 1866-67, states that amongst the 250 fatal cases enumerated in the conspectus of the *post-mortem* examinations, five were put down as having miliary tubercles in the lungs and other organs. Also that quite distinct from these cases with "Miliary Tuberculosis," he found thirty-eight cases which had small round grey nodules in the liver, and occasionally also in the

kidney. He further distinguishes from "Miliary Tuberculosis" a certain kind of nodules that were sometimes found on the serous coat of the ileum, near the ulcers, and even on the peritoneum generally, and on the pleuræ. Creighton draws particular attention to these nodules, and classes them as having reference to Tuberculosis; he says, "I do not doubt that these flat nodules of the serous membrane, which may be as large as lentils, of decaying colour, and sometimes of firm texture, apt to be ill-defined at their margins, and it may be not more than half a line raised above the serous surface, are the same which I have described and figured as the more or less miniature tubercles or pearls of Perlsucht." We have further proof of the identity of Typhoid Fever and Tuberculosis in the outbreak at an industrial school at Bristol. Out of the twenty boys or more that were attacked four died; and in every case *post-mortem* examinations revealed the existence of tubercles in the different parts of the body, and especially in the lungs. We find it quoted in Quain's "Dictionary of Medicine," under the head of Typhoid, that "Klebs claims to have identified a Typhoid bacillus, which he has found not only in lymphatics and blood, but in the tissues; and it is probable that this discovery will be confirmed." The outbreaks of Typhoid are often insidious in their nature: water pollution, defective drainage, contaminated milk, have each in turn been assigned as the cause. For the want of additional evidence, the hypothesis that there is any connection between Tuberculosis and Typhoid Fever will have to rest here. But we may state that the uncertainty which surrounds the outbreaks of the latter disease should prompt us to investigate whether or no tubercular milk is the medium by which the disease is conveyed.

(*To be continued.*)

ROYAL AGRICULTURAL SOCIETY.

AT the Monthly Council, held on June 6th, Lord EGERTON (Chairman) presented the following report, drawn up by Professor Robertson, on the Foot-and-mouth Disease experiments which have for some time been carried out at the Royal Veterinary College on behalf of the Society:—

London, *May 25th*, 1883.

MY LORDS AND GENTLEMEN,—In my report of the experiments which had been conducted with reference to the communicability of the fever of Foot-and-mouth Disease, laid before the Committee in March, it was then stated that fresh animals had been obtained with the view of testing the effects of the direct conveyance into the blood-stream of the disease-bearing fluid of the local lesions, the object being to determine whether a modified fever might be produced, which would afford protection against the natural form. This proposed experiment has been carried out, and, so far, with positive and satisfactory results.

Two steers, which had been retained under observation long enough to satisfy us that they were not suffering from disease, had, at noon on the 31st March, injected into the jugular vein of each three minims of the clear fluid removed from the vesicles of an infected animal previous to their rupture. On the evening of the following day both animals were feeding indifferently; there was, however, no appreciable disturbance, as indicated by rise of temperature, or acceleration of pulse. April 2nd—neither animal consumed more than half the usual morning meal; both appeared somewhat dull, pulse unaffected, but the internal temperature elevated one degree, as compared with what had been its normal standard for ten days previously. At noon the temperature

reached its maximum, being 102·5° F., in the other 103·5° F. At this time, also, vesicles showed themselves on the visible mucous membranes. With one animal these were situated on the tongue, with the other on the muzzle; in neither case were they numerous or large. In two days following the appearance of these lesions, minute vesicles were detected around the coronets and interdigital spaces of both. At no time, from the period of inoculation, could any trace of the puncture of the vein be detected, nor was there any tenderness in the course of the vessel. During the time that local lesions gave indications that the fever had existed, both animals continued to feed well, and to ruminate regularly, with no general disturbance, as evidenced in alteration of respiration, pulse, or internal temperature, with the exception of the elevation of the latter, noted from the second to the fourth.

Since the recovery of the steers from this induced attack of fever, two different attempts have been made to reinduce it, by the employment of secretions from the actually suffering, in a manner similar to that by which the disease was implanted in previous animals, but without success.

The actual utility of those results may be questioned, seeing, although we may be able to induce fever of a more moderate type by intra-venous injection of a variously charged fluid, it is not at all probable that the disease so induced will afford protection for a longer period against a second attack than is obtained by its development in the natural form. It is, however, deserving of a still further trial, on a larger scale, particularly with pregnant animals and such as are yielding milk. Should it in these instances be found that the fever so induced is less disposed to result in abortion, and less detrimental to the milk-secreting function, a considerable step may be regarded as having been gained in lessening the great monetary losses occasioned by this fever.

In order that such experiments shall be of value, they ought to be carried out in a large herd of cattle, and for a lengthened period; but unfortunately at the present time neither the Royal Agricultural Society nor the Royal Veterinary College possess the facilities or the means of making these.—I have the honour to be, my Lords and Gentlemen, your obedient servant,

WM. ROBERTSON.

This report having been adopted,

Mr. GEO. WISE said he had thought it desirable to call the attention of the Council to a new disease amongst horses, from which he had himself been a sufferer. The disease was something similar to Eczema in man; it was a skin disease, and amongst his own horses it began in the back, then went to the shoulders, and afterwards to the mane and tail. He believed that it came originally into this country with some horses from Canada, and he had chiefly heard of it in the neighbourhood of Brighton, and in the county of Surrey, where he now resided. He was afraid that veterinary surgeons understood very little about the disease, and, therefore, he might state that he had successfully used carbolic soap on the horses affected, as well as on a cat in the stable, which caught the disease, and the man who looked after the horses. One veterinary surgeon whom he had consulted told him that he had used acetic acid with similar success. Mr. Wise added that the reason why he brought the matter forward was that as a great many agricultural shows are now being held, exhibitors should warn their servants of the importance of always taking their curry-combs and brushes with them and never lending them to servants of other exhibitors, as he was convinced that the disease was sometimes communicated in consequence.

Army Veterinary Department.

Gazette, May 30th.

Veterinary Surgeon J. Hanly retires on retired pay.

The Annual Dinner of the Army Veterinary Department took place at the Café Royale on June 8th, Mr. Collins, Principal Veterinary Surgeon, presiding. There were present, Messrs. Gudgin, Cheesman, Walters, Sartin, Gibbs, Reilly (C.G.H.), Sewell, Fleming, Reilly (J.), Hinge, Matthews, Anderson (M.) Mitchell, Wilson, Ringe, Cox, Burt, Webb, Appleton, Jones, Gillard.

At the levée held by the Prince of Wales, on behalf of Her Majesty, on the 15th June, Mr. Collins, Principal Veterinary Surgeon to the Army, was presented by His Royal Highness the Duke of Cambridge.

Parliamentary Intelligence.

House of Commons, May 25th.

VETERINARY REPORT.

DR. CAMERON asked the Financial Secretary to the War Office whether it was true that copies of the report of the principal Veterinary Surgeon of the British Army in Egypt on the Egyptian campaign had been supplied to the orderly rooms or officers of the Cavalry regiments engaged in that campaign; and, if so, whether he would lay the report before Parliament.

Sir A. HAYTER.—In reply to my hon. friend, I have to say that copies of the report in question have been forwarded to the commanding officers of regiments of Cavalry, as well as to veterinary surgeons, for their professional information; but being a purely departmental report, furnished for the information of the Secretary of State, it is not proposed to lay it upon the table of the House.

Obituary.

WE regret to announce that E. W. Goldsmith, Army Veterinary Department, was accidentally drowned at Sealkote, India, on May 9th. Mr. Goldsmith only graduated in 1879.

The death is reported of L. Hunter, M.R.C.V.S., Dublin, and A. Robbie, M.R.C.V.S., Kincardine; the former graduated in 1871, and the latter in 1861.

We have also to chronicle the death of Dr. Karl Friedrich von Heusinger, formerly Clinical Professor in the University of Marburgh, who died on May 6th, at the age of ninety-one years. He was appointed to the office in 1829, and held it nearly forty years. He was previously (1821) Professor of Physiology and Comparative Anatomy in Jena, and (1824) Director of the Physiological Institute in Würzburg. He was the author of an encyclopædic work on *Natural History and Therapeutics*, and of important contributions to comparative pathology and medical geography. His most valuable works in relation to veterinary medicine were, "Recherches de Pathologie Comparée," in two volumes, and "Die Milzbrandkrankheiten der Thiere und des Menschen" (Anthrax in Man and Animals). Dr. Heusinger was an Honorary Associate of the Royal College of Veterinary Surgeons.

THE LATE VETERINARY SURGEON D. PALEY, LATE OF 116, STEPHEN'S GREEN, DUBLIN.

THE remains of this well-known and highly esteemed member of the profession were interred in Mount Jerome on the 1st May, and the funeral was attended by a large number of professional brethren as well as friends of the

deceased. Amongst the veterinary surgeons present were Messrs. Mat Murphy, T. D. Lambert, J. D. Lambert, J. J. Sperring, James M'Kenny, P. A. Lawlor, and J. Freeman; also, Messrs. R. J. Hunter, John Kelly, W. M'Grane, C. M'Grane, W. Lennon, Simpson, Sewell, Garrett, etc. Mr. Paley, who at his decease was only forty-six years of age, graduated as a member of the Royal College of Veterinary Surgeons in 1859, and selected the Army Veterinary Service as his career. He served both in the Artillery and the 11th Hussars, but retired from the service in 1865, leaving golden opinions behind him among his brother officers. He then commenced practice in Dublin, which was a most successful one up to the commencement of the sickness which had incapacitated him from active life for a long period. This enforced idleness could not but leave its mark in a financial sense on his resources, and we are sorry to state that he has consequently left a wife and twelve young children almost entirely unprovided for. With the object of raising some fund for the benefit of his helpless and unprotected representatives, a provisional committee has been formed, consisting of Messrs. James M'Kenny, Stephen's Green; T. D. Lambert, Store Street; Peter Lawlor, Westland Row; W. Pallin, Athgarvan Lodge, Curragh; J. J. Sperring, 73, Amiens Street.

The first meeting of the above committee was held on the 9th ult., when it was decided to issue circulars to the late Mr. Paley's numerous friends and clients, as well as to members of his own profession, asking subscriptions for the purpose of placing Mrs. Paley and her family (twelve in number) in a position to help themselves in the world. The case is one of peculiar and particular urgency, and demands prompt relief, which, we trust, will be given them. Several subscriptions have been promised already. Captain J. M'Calmont, Kildare Street Club, has kindly promised to act on the committee, with several other gentlemen of known influence, with Mr. James M'Kenny, of 116, Stephen's Green, as hon. treasurer. We hope they will receive liberal support in aid of the representatives of one who, in his prosperity, was ever ready to aid others.

It was also decided to ask the Editor of the VETERINARY JOURNAL to give prominence to this fund, and to be kind enough to receive any English subscriptions in its support.

Notes and News.

RESEARCH IN SANITARY SCIENCE.—Subject to the conditions of their scheme, the Grocers' Company now announce as the matter of competition for their first Quadrennial Discovery Prize of £1,000 for original research in sanitary science the following problem:—"To discover a method by which the vaccine contagium may be cultivated apart from the animal body, in some medium or media not otherwise zymotic, the method to be such that the contagium may by means of it be multiplied to an indefinite extent in successive generations, and that the product after any number of such generations shall (so far as can within the time be tested) prove itself of identical potency with standard vaccine lymph." The prize is open to universal competition, British and foreign. Competitors for the prize must submit their respective treatises on or before the 31st of December, 1886, and the award will be made as soon afterwards as the circumstances of the competition shall permit, not later than the month of May, 1887. In relation to the discovery prize, as in relation to other parts of the Company's scheme in aid of sanitary science, the Court acts with the advice of a scientific committee, which at present consists of the following members:—John Simons, C.B., F.R.S., John Tyndall, F.R.S., John Burdon Sanderson, M.D., F.R.S., and

XUM

George Buchanan, M.D., F.R.S. All communications on the subject are to be addressed to the clerk of the Grocers' Company, Grocers' Hall, London, E.C. The Grocers' Company have issued a circular giving the conditions of the candidature and award.

VETERINARY MEDICINE IN INDIA.—With a view to the study of veterinary science, the Lieut.-Governor of Bengal offers two prizes, one of £50 and the other of £20, for competition by holders of agricultural scholarships from Bengal, who have studied at the Royal Agricultural College, Cirencester.

THE GERMAN BOARD OF HEALTH.—Among the savants who compose the Bureau of Hygiene for the German Empire, we find Dr. Schütz, of the Berlin Veterinary School; Dr. Siedamgrotzky, of the Dresden Veterinary School; and Herr Lydtin, Veterinary Surgeon in Chief to the Grand Duchy of Baden.

THE BRUSSELS VETERINARY SCHOOL.—By royal warrant of February 21st, Professor Thiernesse, late Director of the State Veterinary School at Brussels, is awarded an annual pension of 9,450 francs = £378.

VETERINARY HONOURS.—Count Ercolani, of the Bologna Veterinary School, has been elected a member of the Superior Council of Public Instruction, by the Faculty of Human and Veterinary Medicine of that University. Professor Vallada, Director of the Milan Veterinary School, has been nominated an Officer of the Crown of Italy.

INFLUENZA.—The epizootic disease known as Influenza, but which is now receiving the fantastic designation of "Pink-eye," is causing such ravage amongst horses in Aberdeen city and county, that the tramway traffic is all but stopped, and railway and other carriers find it almost impossible to carry on their business. The local authorities have cut off the water from the public cattle and horse-drinking troughs, in order to lessen the danger of infection. The Royal Northern Agricultural Society have appointed a committee to take up the subject of "Pink-eye" among horses, and communicate with the local authority of the county as to measures being taken to compel railway companies to have the boxes for conveyance of horses disinfected, as in the case of cattle trucks.

VIVISECTION.—The report of Mr. Busk, F.R.S., Inspector under the Cruelty to Animals Act, as to experiments performed on living animals in England and Scotland during the year 1882, has been issued as a Parliamentary paper, with various tables annexed. The inspector says:—"The names of the 42 persons who held licenses during any part of the year 1882 are given in the tables, in one of which are entered the names of those licensees, 26 in number, who performed any experiments; and, in the other, the names of the 16 who performed none. The total number of experiments of all kinds performed during the year was about 406. Of these 118 were performed under the restrictions of the license alone; 29 under certificates in column 1 (permitting experiments in illustration to lectures, with anæsthetics); 219 under certificates in column 2 (special for experiments without anæsthetics); 40 under certificates in column 3 (dispensing with the obligation to kill the animal before recovering from anæsthesia). The experiments on dogs and cats under the certificates in column 4 (permitting experiments on cats, dogs, horses, mules or asses) are included among those enumerated under the certificates in column 2. As in all the experiments, except those done under the special certificates in columns 2, 3, and 4, which dispense either entirely or partially with the use of any anæsthetics, the animals are rendered completely insensible, and kept so till death, there is no reason to suppose that any appreciable suffering could be caused. (*a*) With respect to the experiments under certificates in column 2, in 204 of them the only operative proceeding, consisting either in simple inoculation with a morbid virus

or in the introduction of different therapeutic substances by hypodermic injection, would be scarcely felt. The only suffering in these cases would arise from the after consequences of the inoculation, etc., in the production of disease, or from the action of the substances administered. In either case the suffering, if any, would be of very brief duration, as the animal would either die or be at once killed. As a matter of fact, I have been assured by all the experimenters that in this class of cases no appreciable pain was manifested. In 14 other cases no operative proceeding of any kind was required, and no pain whatever was inflicted. (*b*) Of the experiments under certificates in column 3, 23 also consisted in the hypodermic injection of various medicaments or poisonous substances, or in their introduction into a vein by an incision through the skin ; in none of these experiments, as I am informed by the experimenters, was any appreciable pain inflicted. In 12 of the experiments the operative proceeding was of a more important character, but being done under anæsthesia it would be unfelt, the only suffering, if any, being that subsequently experienced in the course of the healing of a healthy wound in the few animals that survived the operation ; and these, as I am told by the experimenter, regained perfect health, though partially paralysed. In conclusion, I would remark that so far as I have any means of judging, the amount of direct pain or suffering inflicted in the prosecution of physiological, pathological, and therapeutical researches during the past year was altogether trifling, and limited to between 20 and 30 animals, mostly frogs."

Correspondence, etc.

THE BENEVOLENT SOCIETY AND PROFESSOR WALLEY'S LETTER.

SIR,—The letters published in the journals from Professor Walley and Mr. T. Barker do honour to their heads and hearts. I allude to the letters appealing to the profession to help Mrs. Robert Hall and her five children, now in Stockton-on-Tees Workhouse. I trust this call has been liberally responded to, although they are utter strangers to me. It is enough for me they are the widow and children of *a veterinary surgeon*, and are requiring help in *their great distress*. I have sent to Professor Walley £5. If other 100, or even fifty members of our profession will subscribe a like amount, he would be enabled to place her and her poor orphans in a position of comparative comfort. I hold that it is a sacred duty of every member to assist in such a case. Each can and ought to subscribe at least 10s. 6d. or £1 1s. I hope, I ask, and implore that they will do so. Surely the consolation arising from the approval of a good conscience will be a sufficient incentive ; for

> "Charity, like mercy, is twice blest—
> It blesseth him that giveth and him that receiveth."

"Oh that man would be wise, and consider his latter end!" It would seem that he cannot or will not be wise in time. There is scarcely a month passes but we, the officers of the National Veterinary Benevolent Society, receive applications from widows or orphans in want of assistance, left wholly unprovided for, but whose husbands or fathers not being members of our society, our rules preclude us from rendering assistance out of our funds. We know it is a fact that some men and some women are unworthy characters, and not deserving of sympathy ; but do not let us condemn all for the sake of a few isolated cases. We know it is a fact, and this we also admit, that there are cases in which the veterinary surgeon is toiling hard, is careful and deserving, but every shilling he can earn is required to bring up a perhaps large and increasing family ; but there are none who cannot make provision,

if they are so disposed, by insuring their lives and paying a small sum yearly. The ordinary insurance companies, who expend more than half their income in large rents, large salaries, and extensive advertising, can repay handsomely; but our own National Veterinary Benevolent Society has not one shilling to pay for rent, salaries, or advertising, and its funds amount now to thousands of pounds. For the small annual payment of 10s. 6d. or 21s., or less than 2½d. or 5d. per week (after the entrance-fee is paid), your widow or orphans, those who are near and dear to you in this life, will be cared for and made comfortable when you are no more, if, in the inscrutable designs of Providence, you are unfortunately suddenly removed to that bourn from which no traveller returns. We invite all to become members. Remember

"The numbered hour is on the wing
That lays thee with the dead."

Knott Mill, Manchester. ——— THOMAS GREAVES.

PROFESSIONAL ETIQUETTE.

DEAR SIR,—The following are the particulars of a somewhat rather peculiar circumstance which happened in May this year:—

I had a young mare under treatment, suffering from an injury to the near fore leg (I will not trouble you with details). In course of time I advised the owner to send it to the tan-yard, which was accordingly done. I went to view the animal, and said to the proprietor of the tan-yard, Mr. A., "Will you allow your man to bring this leg to my place?" "Ah!" says Mr. A., "Mr. B., veterinary surgeon, saw the mare yesterday, and begged the leg, which I have promised him." I said, "If you will tell Mr. B. that the case is mine, and I am entitled to the leg, he will most certainly forgive you your promise." Mr. A. said, "I will do so, as I should not like any bother." To make the story short, Mr. B. *has got the leg.*

Now, Mr. Editor, I should like to have the opinion of yourself or one of your readers upon such conduct, and whether it is considered honest. Apologizing for thus troubling you,—I remain yours respectfully,

Chester, *8th June.* ——— R. C. EDWARDS.

THE NATIONAL VETERINARY ASSOCIATION.

SIR,—Taken in its entirety, the progress made by the profession during recent years has been satisfactory. All efforts for the advance of knowledge ought to receive encouragement and assistance, and will do so from all who wish to forward its best interests. There are, however, men in our ranks who, from various motives, decry everything save that in which they are first and foremost, raising themselves on the reputation of others by any means—disreputable or otherwise.

In your June issue, there is a letter under the above heading, purporting to be a criticism of "Tuberculosis," etc. I shall not attempt to wade through it: it would be both wearisome and unprofitable; but I propose to offer a few remarks on its apparent purport.

As I take it, it is a puerile and scurrilous attempt to bring the writer of Tuberculosis into disrepute, through a few clerkly errors, such as the critic himself has, in a varied degree, been guilty of, and that after, I have no doubt, repeated corrections and supervisions. That these errors arose from hasty preparation of the article in question, is explained by an editorial foot-note. Question is, Could critic have done as well? Answered inferentially, he has never touched the scientific aspect, afraid of getting out of his depth, if not altogether at sea. We cannot all possess the quintessence of scholastic attainments of the writer; personally we prefer to be without, having in lieu common sense.

My education, if it did not endow, or rather develop, such brilliant abilities, taught me that there were amenities due from man to man, without considering those of the profession. Such uncalled for censure has infringed even ordinary decency, and will be treated with the contempt it deserves. If the author of this vituperative production knows no better, let him again go to school, where he will learn that "manners" make the man.—Yours as of old,

RUSTICUS.

P.S.—I do not intend any hair-splitting, but a tilt on scientific subjects not barred.

SIR,—Having perused, in the last issue of your Journal, a letter which has direct reference to me as the author of the paper on Tuberculosis, my first impulse was to treat it with the silence which is suggestive of contempt. *Mr.* Sheather having, however, gone out of his way to render himself objectionable, and the *animus* of his letter being so apparent, I am constrained to make a few remarks in self-defence.

If the critique was a fair one, and the spirit in which it was written inspired by pure motives, your *editorial* foot-note would perhaps have been a sufficient answer. The letter signed by Mr. Sheather is evidently an exposition of the views held by a small clique, of which he forms an insignificant and, generally, silent member. On this occasion, however, as if the prominent ones were ashamed of their task, he has been selected as the champion through whom these views may be made known; and we are deluged with a flood of denunciatory phrases so utterly incoherent in their connectedness that I defy any one to arrange them in anything like order. The utterances to which he treats the veterinary world are the manifestoes of narrowness on the one hand, and vanity on the other. This transcendentally gifted critic, I may inform your readers, is a member of the Provisional Committee of the National Veterinary Association, and as such was requested to render assistance by contributing a paper for discussion at the late May meeting of the Association; but whether owing to modesty or inability (I could not at the time discover which), he declined. Since, however, this literary athlete has shown his hand, it is evident that the former, *i.e.*, *modesty*, did not influence his calculations, but we are not quite assured whether the latter did not exercise some influence. It was not, sir, until after he and others had refused that I was called upon to lend a helping hand, *ergo* his remark as to "the necessity of guarding against the acceptance of volunteers to write on *any* subject" is entirely uncalled for.

The old definition of the term "critic" was "one who has tried himself and failed; or one who has not the ability to create, but sufficient for the attempt to destroy." How near Mr. S. comes to this definition your readers will now judge.

Mr. S. would summon me to the bar of judgment for faults of grammar and punctuation. If a few clerical and printers' errors in a paper which was virtually never revised are sufficient grounds for his condemnatory language, he has indeed scored a point. The old adage anent people "living in glass houses" is particularly applicable to Mr. S. and his gushing criticisms, for the relative value of comma and colon are evidently unknown to this embryo *Mecœnas*, and the sooner you, sir, or some of his friends, teach him how to make a "full stop," the better for himself and the profession at large. With a style rather more "pedantic and cumbersome" than that at which he complains, and with an amazing confusion of tenses, he tells us in his first sentence of the "confidence and gratification which *were* experienced because of your earnestness, which *is* [present tense] enlisted" in our common cause. Mr. S. has told us that "his mind wandered," so perhaps there is some excuse for his not understanding latter-day phraseo-

logy; and in order to correct these mental vagaries, to which he seems so subjected, I would suggest a perusal of Dr. Quain's "Dictionary of Medicine," the writings of a veterinary professor and others who do not consider "suspended in solution," "diathetic tendency," "experimentation," etc., to be such grave departures from technical correctness as is supposed by this "youthful aspirant to fame." What, for instance, would the *editor of the Medical Press and Circular* say to Mr. S.'s critique on the following passage, which I append *verbatim et literatim?*—"In another series of experiments the sputum of phthisical patients was obtained and dried thoroughly for six or eight weeks. At the end of this time, being *suspended again in solution* [italics my own], and injected into guinea-pigs, the latter became rapidly emaciated." If one of the leading men in the medical profession can afford to abuse the English language in this most dreadful manner, surely *I* may be forgiven. But possibly the medical profession does not number in its ranks so advanced a critic as Mr. S.!

If Mr. S. had the welfare of the profession at heart, would it not have been more consonant with good fellowship to have attended the meeting referred to, and stated his views then and there? It would have afforded me great pleasure to have rendered any explanation necessary. He did not choose this course, but preferred rather to adopt, and at a distance, the part of the "carping critic." Actions like these, sir, savour very much of cowardice, and, judging from the number of letters I have received from all parts of England and Scotland condemning Mr. S.'s bad taste, are severely deprecated.

Presuming, for the sake of argument, that my paper was as defective as this young gentleman would insinuate, and that his ornate generalizations find echo elsewhere, what benefit is to be derived from the course he has pursued? If it be the means of ridding himself of a troublesome atrabilious spasm, it only benefits those who are brought into daily contact with him. Had he taken up the question of Tuberculosis, and attempted to unravel some of the mysteries connected with this disease, I should have welcomed him as a disputant or as a co-worker.

Mr. S. knows perfectly well that, although the paper was to be printed and circulated, it was intended for members only, and consequently was of a more or less private nature; and that its subsequent publication, together with other subject-matter, would, in the ordinary course of events, be left to the Committee; therefore Mr. S., as forming a member of that body, is guilty of a defection which is highly censurable. Mr. S. is apparently one of those young men who, having an exaggerated idea of their own ability, begin life rashly, and who are tolerated solely in the hope that by rubbing against older and more experienced men they will eventually tone down and become less obtrusive members of society. Amongst the first things he will have to learn are the manners and customs which render a person eligible for this position, and cease to indulge in those splenetic vapourings which are the outcome of a vain mind.

As Mr. S. has concealed, with a persistency often found amongst a certain class of critics, the context of the various passages from which he has made quotations, I am compelled to ask you, sir, to allow my paper on Tuberculosis to appear in your Journal. This, you will quite understand, is only fair to me, as there are many who read your Journal, but who are not members of the National Veterinary Association. The profession will thus have an opportunity of putting the true value on the garbled statements of your correspondent. The next time I am *asked* to write a paper for discussion at a meeting of the National Veterinary Association I may place, in order to ensure its correctness, the MS. for revision at the feet of this Gamaliel.

—Yours faithfully,

J. H. Cox.

EDUCATION *VERSUS* ETHICS.

SIR,—The above title may appear incongruous, but certainly not more so than the severe criticism by Mr. Sheather on the grammatical errors of Mr. Cox's paper, compared with the "Professional Humbug," and "Disgraceful Advertising" on the pages following his letter.

No one can possibly object to the desire your correspondent shows that the profession should appear to the public as a scientific and learned one (all credit due to him for taking advantage of such opportunities as fell to his lot; few even of his contemporaries have enjoyed the same), but much conscientious objection can be taken to the educational gnat being so strained at while the ethical camel is swallowed, *smothered*, I may say, judging from the way in which a minor subject introduced, or sought to be introduced, by my unfortunate self was treated by one of the Council, who thought that such a subject as moral etiquette should not be discussed at an association which has for one of its objects the "maintenance of the honour of the veterinary profession." Surely, sir, it is high time that these sinks of iniquity should be cleansed, if even it requires your herculean strength, whose "earnestness is always enlisted on behalf of the advancement of the veterinary profession." This advancement I submit to be only attainable by *first* raising the social and moral position of the calling, for so long as its members indulge in horse-dealing, dog-dealing (*vide* advertisement in *Field*, "no dog sold under £5"), quack advertising, and the like, to say nothing of the forge, the mystical "L." and "E." and the general "get-up," clerical and grammatical errors such as those denounced, will play but an infinitesimal part in the estimation of us by the public. *Honourable social status* is what we lack, and unless we strive to obtain it by the improvement of our morals, no amount of good English or scientific acquirements on the part of the few, will serve to raise us as a whole to that position which, by virtue of our profession, we are entitled to claim. I confess to being weary of the subject. Doubting not I have made others so, and feeling I am not sufficiently competent or influential to deal with this great question of social reform, I leave it, in the hope that it may be taken up by all well-wishers, and in particular by the educated rising generation.—Yours faithfully,

Leatherhead, *June 21st*, 1883. HENRY DYER.

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

DEAR SIR,—In reference to the report of 13th February of the above Association, instead of supporting or remaining neutral regarding the National Veterinary Medical Association, it ought to have been rendered, "that after discussion the matter dropped."—Yours respectfully,

Liverpool, *15th June*. ALEXR. BAIN, *Hon. Sec.*

A CASE FOR CHARITY.

DEAR SIR,—The letter headed "A Case for Charity," which was published in the VETERINARY JOURNAL for this month, was brought to the notice of the Central Veterinary Medical Society at its meeting on the 7th. It was then resolved that if any subscription were organised for the benefit of the widow and children of the late Robert Hall, a donation should be voted from the funds of the Society, and this resolution I am requested to make public through the medium of your Journal.—Yours faithfully,

London, *June*. ALFRED BROAD.

XUM

Subscriptions received by Professor Walley in aid of Mrs. Hall and her Family.

R. Jerwood, £3 3s.; T. Barker, £1 1s.; Edmd. Nuttall, £1 1s.; Thos. Greaves, £5 5s.; C. Sheather, £2 2s.; T. G. Chesterman, £1 1s.; T. Foreman, 10s.; P. B., 5s.; J. Bell, Clonmel, £1 1s.; G. Fleming, £1 1s.

Additional subscriptions for *Mrs. Brosnan and her family:* — Aitken, Loughborough, 10s.; G. Fleming, £1 1s.

CORRECTIONS.

THE Secretary of the Scottish Section of the Board of Examiners sends the following corrections in the report of the Examinations held in Edinburgh. New College: "A" Examination.—Mr. A. C. Chamberlain is shown as having passed, whereas he was rejected. "B" Examination.—Mr. A. E. Haslam should be A. J. Haslam, passed with very great credit.

In Mr. Hagger's paper on Gunshot Wounds, in last number, on page 394, line 14, for "chloride of lime," read "chloride of zinc"; and line 6 from bottom, read "target area" for "target arc."

In Fleming Testimonial Fund, for "J. McGaren" read "J. McGavin."

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from A. H. Santy, Norwich; R. C. Edwards, Chester; T. Greaves, Manchester; J. A. Nunn, India; E. Faulkner, Manchester; B. L. Coleman, Sandwich; M. Hedley, Dublin; G. A. Banham, Cambridge; R. Rutherford, Edinburgh; L. T. Tipper, Balsall Heath; A. Metherell, Brighton; A. Bain, Liverpool; J. H. Cox, Aldershot; A. Broad, London; J. A. Meredith, Ellesmere, Salop; H. Dyer, Leatherhead.

BOOKS AND PAMPHLETS: Organisation du Service Vétérinaire; Transactions of the Epidemiological Society of London; *F. Ram*, Breeding Horses for Use; *J. Lambert, F.R.C.V.S.*, The Germ Theory of Disease; Procès Verbaux des Réunions tenues à Strasbourg; *A. Bizzi*, La Produzione Mulattiera in Sicilia; *Bourneville et Bricon*, Manuel des Injections sous-cutanees; Report of Calcutta Society for the Prevention of Cruelty to Animals.

JOURNALS, ETC: *Tidskrift för Veterinär-Medicin; La Clinica Veterinaria; Der Thierarzt; Lancet; Annales de Méd. Vétérinaire; Wochenschrift für Thierheilkunde; Revue Vétérinaire; Oesterreichische Vierteljahresschrift für Wissenschaftliche Veterinärkunde; L'Echo Vétérinaire; Health; Australian Medical Gazette; Quarterly Journal of Veterinary Science in India; Recueil de Méd. Vétérinaire; Journal de Méd. Vétérinaire; American Live Stock Journal; Der Hufschmied; Archives Vétérinaire; American Veterinary Review; Live Stock Journal; Medical Press and Circular; Mark Lane Express; British Medical Journal; Stock-keeper; Deutsche Zeitschrift für Thiermedicin; Archives Vétérinaire.*

NEWSPAPERS: *Irish Times; Sportsman; Leeds Mercury; Glasgow Herald; North China Daily News; Observer; Eastern Counties Gazette.*

TO CORRESPONDENTS.

No notice can be taken of anonymous communications. Whatever is intended for insertion must be authenticated by the name and address of the writer, not necessarily for publication, but as a guarantee of good faith. We cannot undertake to return rejected communications.